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# A THEORY OF SECOND LANGUAGE ACQUISITION WITHIN THE FRAMEWORK OF NATURAL PHONOLOGY

A Polish – English Contrastive Study

POZNAŃ 1990

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ABSTRACT. The present monograph lays the grounds for a theory of the acquisition of a second language phonology within the framework of Natural Phonology. The work is based on experimental research focusing on Polish learners of English and, secondarily, speakers of other linguistic backgrounds. Attention is paid to normative and performance restrictions imposed on the process of acquisition by the first language. The content of the work is weighted in favour of an elaborate discussion of phonostylistics (casual speech in particular). The implications are both theory-oriented (valid for Natural Phonology) as well as practical (valid for the construction of language learning/teaching methodologies).

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# Contents

Preface / 5
Chapter One: Introduction / 7
*Chapter Two:* Theoretical preliminaries / 10
*Chapter Three:* Hypothesis / 19
*Chapter Four:* Description of experiments / 24
*Chapter Five*: Analysis and discussion of the experimental data / 34
*Chapter Six:* Conclusions / 65
References / 72
Appendixes / 80
Appendix 1 / 80
Appendix 1A / 82
Appendix 1B / 82
Appendix 2 / 83
Appendix 3 / 83
Appendix 4 / 83
Appendix 5 / 84

# Preface

The present work is a revised version of my Ph.D. dissertation defended in 1988 at Adam Mickiewicz University, Poznań.

I would firstly like to take this opportunity to express the best possible gratitude and thanks to the supervisor of my thesis Professor Jacek Fisiak (Adam Mickiewicz University) for his constant, never–failing, and irreplaceable assistance and encouragement in all my scholarly endeavours.

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However, I fully acknowledge that the final responsibility for the work is mine.

Poznań, November 1988

*Katarzyna Dziubalska–Kołaczyk*

*Chapter* **1**

# Introduction

The aim of the present thesis is to lay the grounds for a theory of the acquisition of a second language <NOTE 1> phonology with the help of the principles of Natural Phonology. The formulation of the acquisition theory follows deductively from general assumptions of the natural framework and as such constitutes a hypothesis to be tested in an empirical study.

Natural Phonology (as originated by Stampe 1969, 1980; and Donegan and Stampe 1979; and developed, modified and ammended by Dressler 1985 and previous works ) possesses important advantages in comparison with other phonological frameworks with reference to the suitability for acquisition studies. It provides a model for the so called "low level" phonological processes largely neglected by other schools. Thus, the whole realm of phonostylistic processes, treated only marginally so far, have received deserved attention within Natural Phonology.

Another advantage is connected with an essential role played in the framework by substantive evidence which equips phonology with additional variables from different domains such as speech pathology, speech errors, loan phonology, native speaker's intuitions and language acquisition. This kind of socio–psycho–physiological basis given to phonology renders the model liable to concrete extralinguistic applications e.g. in second language learning/teaching or in speech therapy.

A great emphasis in Natural Phonology is laid specifically on the process of first language phonological acquisition and on an essential difference between processes which are innate and processes which are learned. The acquisition of second language phonology, however, has so far been left untouched. Alongside neuro-psychological theories of language acquisition, Natural Phonology would predict that after the age of puberty, which is usually the time when foreign languages are learned, the learner should encounter difficulties in accomplishing the task of accuisition as, by that time, the maturation process of the nervous system is completed and "there is a progressive loss of modifiability as the organism matures" (Whitaker 1975: 130).

Here lies the need for an empirical study directed towards the substantiation or verification of the above prediction. The present work is, consequently, based on experimental research whose purpose was to collect an extensive corpus of pertinent data suitable for a detailed auditory and instrumental analysis. The data resulting from part of the experiments are sufficiently large in quantity to allow for statistically

significant generalizations, while the others serve as case studies intended to illustrate noticeable tendencies. The data are subject to a phonetic/phonological analysis, but they also comprise the elements allowing for socio–psychological processing.

The acquisition of second language phonology is considered with reference to two phonological components: an obligatory one and an optional one. What underlies the distinction is sensitivity to style: the former – obligatory – component comprises those phonological processes which are style–independent i.e. they apply no matter what style of speech is used, while the latter – so–called optional <NOTE 2> – component consists of the phonostylistic processes, which are motivated by the choice of style.

While the mechanism of the acquisition of both components of a second language phonology by the learner is studied, attention is also paid to normative and performance restrictions imposed on the process of acquisition by the first language. Here a special reference is due to the sociopsycholinguistic bridge–theory built up by Dressler and Wodak (cf. Dressler and Wodak 1982) and to the processual model of morphonology proposed by Dressler (cf. Dressler 1985: 292 ff).

Although the work focuses on Polish learners of English, it also contains a supplementary set of data derived from speakers of other linguistic backgrounds.

If accomplished, the goal set for this work would have theoretical as well as practical implications. The former has already been touched upon and awaits further elaboration throughout the work, the latter potentially involves concrete recommendations for the construction of language learning/teaching methodologies. In particular, the study of the acquisition of second language phonostylistics might prove insightful with reference both to the theoretical foundations of the process and to its implementation in practice.

The most active sub–component of phonostylistics is considered here, i.e. the processes applicable in the least formal styles of speech : casual – the least attentive – minimally linguistically constrained, and usually fast (although speed is not a decisive factor: an increase of speed does not result in casualness if the level of attention paid to speech is increased as well <NOTE 3>). In view of the considerable neglect of this aspect of second language acquisition, the content of the work is weighted in favour of an elaborate discussion of this issue.

The thesis consists of six chapters. *Chapter One* constitutes an introduction to the work. *Chapter Two* and *Chapter Three* are theoretically oriented. The former is devoted to the informative and critical presentation of the phonological framework adhered to in this work. It also reviews the importance of the social psychology of language in second language acquisition studies. In the latter the hypothesis guiding the research in question is stated. Subsequent two chapters constitute the empirical section of the work and are, respectively, devoted to a detailed description of the experiments conducted for the purposes of the thesis (*Chapter Four*), and to the analysis and discussion of the experimental data (*Chapter Five*). Finally, *Chapter Six* states general conclusions and future prospects of the work. Thus organized, the thesis is expected to approach its subject matter from a broad enough perspective to stir further research.

## Notes

*Note 1.* The notions *second language and foreign language* are used interchangeably throughout the work to denote a non–native language.

*Note 2. So called* optional, because, in fact, they may be called obligatory for a given style.

*Note 3.* Cf. the attention approach to phonostylistic variation in Vanecek, Dressler 1977.

Chapter 2

# Theoretical preliminaries

*2.0.* The chapter is devoted, firstly, to the presentation of a theoretical framework adopted in the thesis and, secondly, to the brief discussion of the relevance of social psychology of language to second language acquisition studies. The former starts with the presentation of the model of Natural Phonology as founded by Stampe (1969) and developed by Stampe (1980) and Donegan (1978) and Donegan and Stampe (1977, 1979). This is followed by a brief discussion of relevant modifications and expansions introduced into the model by Dressler (1984. 1985a,b) <NOTE 1> and a short account of major criticisms directed against the framework.

The latter constitutes a concise introduction into the discipline of social psychology of language with special reference to acquisition studies.

*2.1.* Natural Phonology is a contemporary continuation of the oldest explanatory model of phonology dating back to the 19th century and carried over into the 20th century by linguists like Sapir or Jakobson (cf. Donegan and Stampe 1979: 126). Its basic thesis is that sound patterns of languages of the world are determined by forces implicit in human vocalization and perception. These forces manifest themselves through the workings of universal natural processes which are not just conventional constructs devised in order to account formally for regularities observed among languages : they are real mental substitutions with physical teleology.

Underlying the operation of processes is the tension between clarity and ease of speech, which is the reason why processes have contrary teleologies: they aim at facilitating both perception and articulation. They account for the discrepancy between the sound perceived and intended, and the sound pronounced – the realm of phonology.

The tenets of Natural Phonology are supported by evidence coming from phonological acquisition, variation and change, including also such so–called external phenomena as slips of the tongue, language games, mental speech, adaptation of loanwords and others. Reliance on external evidence and, especially, exploration of linguistic variation are the most innovative traits of the framework in comparison to e.g. structural or generative schools of phonology.

*2.1.1.* Processes fall into two main contradictory sets: *fortitions* (also called *centrifugal, strengthening,or paradigmatic* processes) and *lenitions* ( otherwise called *centripetal, weakening, or syntagmatic* processes).

*Fortitions* maximize paradigmatic distinctness by responding to the inner complexities of single segments; they have perceptual teleology; they apply regardless of context (*context–free* processes) or are favoured in "strong" positions e.g. vowels in syllable peaks, consonants in onsets, segments in positions of prosodic prominence and duration; and they apply in styles and situations where perceptibility is valued (attentive, formal, expressive, lento speech) <NOTE 2>. Examples include dissimilation, diphthongization, syllabification, epenthesis.

*Lenitions* minimize syntagmatic difficulty by responding to complexities of sequences of segments; they have articulatory teleology; they are *context* and/or *prosody–sensitive*, favoured in "weak" positions (cf. fortitions above); and they apply in styles and situations which do not demand clarity (informal, allegro speech; cf. <Note 2> ). Examples include assimilation, monophthongization, desyllabification, reduction, deletion.

Almost every phonological process has a corresponding one with exactly opposite effects (e.g. context–free vowel denasalization vs. context–sensitive vowel nasalization).

*2.1.2.* The application of processes can be described as natural for a number of different reasons. Processes operate on natural classes of segments i.e. those which share a common articulatory, perceptual or prosodic difficulty to a common degree.

They operate over natural prosodic constituents i.e.syllables, accent–groups, words etc.

A process normally changes only one feature, i.e. processes make minimal substitutions and do not telescope.

Processes are subject to implicational hierarchies of applicability. The implications dictated by those hierarchies are nonreflexive because the scale of difficulty is unidirectional (the kind and degree of difficulty are different in different situations and settings). Each process is sensitive to a number of different hierarchical constraints on its application,e.g. lower vowels are more susceptible to depalatalization than higher ones, but also lax vowels more than tense ones and labiopalatals more than pure palatals. Another example: h–deletion observes a sonority hierarchy <NOTE 3> : [h] is deleted by many speakers in *whale*, by some speakers in *hue*, but only in a free variant in *high*. The same process when applying in casual speech is subject to a still different hierarchy: in increasingly relaxed speech it applies to increasingly stressed syllables e.g. *his henhouse*, *'is henhouse*, *'is hen'ouse*, *'is 'en'ouse*.

*2.1.3.* The contradiction between two teleologically different sets of processes is resolved in language acquisition period by means of three procedures: *suppression*, *limitation*(here the hierarchies implicit in each process are observed : from the greatest phonetically motivated generality to complete suppression) and *ordering*.

It is thus in infancy that the most extreme processes operate e.g. deletion of unstressed syllables, gross simplifications of clusters and far–reaching coarticulations, or merging of all vowels to [a]. One of those universal natural processes is the devoicing of final obstruents..The process manifests itself differently thoroughout the languages of the world depending on the limitations it undergoes in the acquisition

period. For instance, it is limited to syllable–final position in German e.g. /hund/ – [hunt] vs. ['hun$de] or /maoz/ – [maos] and ['mɔøs$laen] vs. ['mɔø$z ] (cf. Dressler 1985: 11) , thus governing only phonetic representation of words. But in languages where there is no voice opposition morpheme–finally either, the process also governs phonological representation. Or, the process may not manifest itself at all in languages lacking morpheme–final consonants (its potential existence, however, is evidenced in second language acquisition).

The child's representations of sounds conform to adult speech <NOTE 4> – they correspond to the phonological *intentions* perceived by the child in adult speech, and are present in the child's mind before he or she can actually produce their articulatory counterparts.

When the child fails to suppress a process, although it does not apply in adult speech, a phonetic change results. Most often, however, a change begins as an optional pronunciation so that old and new versions coexist as regional, social or stylistic variants before the process finally enters formal speech.

*2.1.4.* Apart from phonetically motivated alternations accounted for by natural processes, language also exhibits phonetically unmotivated ones. These are governed by *rules* that the child has to *learn* in order to apply.

As opposed to processes, *rules* (e.g. English velar softening and vowel shift, or umlaut) possess the following characteristics: they lack current phonetic motivation; they may have semantic or grammatical functions (e.g. umlaut); they are obligatory, but at the same time they may be easily suspended; they are learned constraints which are applied consciously, but which may become habitual; they only govern alternations; finally, they do not apply to slips of the tongue, Pig Latins, foreign words and the like, which makes their application in speech production questionable; on the contrary, the substitutions performed by *processes* occur in performance – mental as well as physical – of utterances and, thus, do manifest themselves in the above contexts.

*2.1.5.* Being aware of the nature of processes and rules one proceeds to explore their organization i.e. how they interact in derivations.

According to the original hypothesis of Natural Phonology, processes apply in an unordered sequential nonlinear fashion. Unconstrained application of processes is phonetically motivated – the existent constraints on it must be acquired. Constraints, however, are also well–motivated e.g. they bring speech closer to its phonological intention and they prevent the merger of phonologically distinct representations <NOTE 5>. The phonetic effort required of the speaker in order to comply with a constraint may very well be suspended in informal, casual styles.

Apart from the above mentioned constraints, processes and rules observe two universal precedence principles in derivation:

1) *fortitions first, lenitions last*
e.g. stop insertion (after nasals, before spirants), which is
a fortition, cannot be fed by casual speech syncope, which is
a lenition, like in : [sinistr]→ [sinstr]→ *[sin(t)str];

2) *rules first, processes last*
e.g. flapping cannot occur before contraction to render : [itiz]→ *[iriz]→ *[irz].

*2.1.6.* If phonological processes and rules constitute the hardware of the speech computer, then how is the software represented? Or, precisely, what kind of a phonological representation constitutes the input to processes ?

"If a given utterance is naturally pronounceable as the result of a certain intention, then that intention is a natural perception of the utterance i.e. a possible phonological representation" (Donegan and Stampe 1979: 163).

Let us consider the following exemplification of the above quoted *naturalness principle*: American speakers perceive [spẽt] as /spent/, because if they intend to say /spent/ they end up with [spẽt]; this is so because the processes of vowel nasalization and of a nasal deletion before homorganic voiceless stops have not been suppressed in the acquisition of the language. If, on the other hand, the American speaker tried to say /spẽt/, he would actually say [spet] due to the fact that context–free vowel nasalization has been suppressed in his speech. As has been demonstrated above , the naturalness principle establishes a basic level of phonological perception, differentiating between phonetic and phonological features. This level basically corresponds to phonemic representation, although it is best understood not as a level per se, but a representation of forms in permanent memory. Allophonic properties are banned from underlying representations, so the latter must be at least phonemic. However, if a form has alternants not derivable from phonemic representation, then its underlying representation must be still deeper.

One corollary of the above reasoning is that the phonemic representation of a given form does not have to appear in its derivation from its lexical representation.

As for the underlying segments themselves, they are of the same ontological status as the surface ones, namely they are pronounceable in principle.

*2.2.* The discussion so far has concerned a model of Natural Phonology worked out by Stampe and Donegan. Presenting Dressler's contribution to the natural framework would call for a separate volume. Therefore, the present reader is referred to the references (especially Dressler 1984, 1985a and b, and forthcoming) while being introduced here only to some basic assumptions of Dressler's approach <NOTE 6>.

Stampe's universal natural processes get the name of phonological process *types* in Dressler's terminology. They are distinguished from phonological *processes* (modelled by *phonological rules*) corresponding to them in individual languages. Process types are separate from one another and phonetically plausible and motivated. They are universal e.g. aspiration of plosives, vowel reduction, nasal assimilation or universal implications based on existing phonemic systems. Their applications are hierarchical from most restricted ones to generalized ones (context–free).

The main function of phonology is to make the outputs of lexicon and grammar pronounceable and perceivable. Thus, processes are either *foregrounding* (strengthening, clarification ones) i.e. securing optimal perception, or *backgrounding* (weakening, obscuration ones) usually serving ease of articulation e.g. vowel lengthening vs. vowel shortening respectively.

While Stampean processes correspond to Dressler's *phonological rules*, Stampean rules correspond to the latter's *morphonological* and *morphological rules*. A typical line of development is from phonological through morphonological to morphological rules. The functions of pronounceability and perceptibility lead to a number of predictions concerning the character and ordering of phonological rules. First, an obligatory phonological rule must be a constraint on articulation and perception. Second, it must be general (exceptionless). Third, it is productive in loanwords, neologisms, abbreviations. Fourth, it should apply in errors. Fifth, it must be phonologically conditioned. And, sixth, in rule ordering, morphology has priority over phonology and fortitions are prior to lenitions.

Phonological rules fall into two groups: prelexical and postlexical ones. The former are of morpheme domain and include segment structure rules and phonotactic rules. The latter are of word and sentence domain and derive their outputs from phonemes.

The nature of the rules in the above blocks is predictable on functional grounds. Language serves communication (& cognition); and two main goals in communication are to be understood and to conform to the needs of the speech tract. With respect to the first goal, phonemes have to be fully specified so that they can be both intended and perceived; consequently, prelexical rules are mainly foregrounding. To fulfill the second goal, phonemes have to be adapted to the needs of the vocal tract; in consequence, postlexical rules are mainly backgrounding.

As for first language acquisition, phonological processes are either innate or they become universally available in maturation. Both morphology and morphonology are learned (& in this order).

In Dressler's model, grammar is not separated from other domains of language, and competence is not separated from performance. This brings about a very important consequence: the essential position of substantive evidence within the model. Apart from purely linguistic ones, physiological, neurological, psychological and social factors are constitutive for language as they also serve language functions. Therefore, the realization of phonological universals in performance is mediated by language type, language-specific competence, sociolinguistic norms and psycholinguistic and phonetic factors. The choice of style is one such extralinguistic factor which largely determines the linguistic shape of utterances : "presumably, 99% of what we speak and hear is casual speech" (Dressler 1985: 315). Casual speech styles are, then, selected most often and are, thus, most influential as far as the application of phonological rules is concerned : the latter are generalized in casual speech <NOTE 7>.

*2.3.* In his 1984 paper Dressler lists the names of the critics of the Stampean model of Natural Phonology with their respective publications in which they attack the framework.<NOTE 8> Dressler himself answers most of the critiques, both in the paper and in *Morphonology*. Wójcik's 1981 paper is also helpful in abstracting major flaws in the critical accounts of Natural Phonology.

Critics of the model basically focus their attention on the Natural Phonology's claim that languages are governed by forces implicit in human vocalization and per-

ception. Though apparently understandable, this unidirectionality can easily lead one astray. More specifically, it results in misconceptions and overlookings of important theoretical claims of Natural Phonology.

Hellberg 1978 undermines the validity of Natural Phonology's claim about phonetic motivation of phonological rules ( he does not use the term *rule* in the Stampean sense). In the conclusion to the paper he states that phonetic factors do not necessarily play the dominant role in determining the shape and establishing of a rule. Other determinant factors he mentions are psychological, grammatical, historical and social. Does this essentially contradict Natural Phonology ? Phonological substitutions, being phonetically motivated, are nonetheless mental and, thus, necessarily influenced by the factors he mentions. For example, lexical and statistical considerations acting as constraints on substitutions are exemplified by Stampe (cf. Stampe 1979: 8). Moreover, Natural Phonology bases its claims on the evidence coming exactly from the observation of the way those factors influence speech. Dressler's functionalist position clearly points to both the communicative and cognitive orientation of language which is fulfilled by processes in a multivaried fashion depending on a whole array of extralinguistic factors. Also, as Wójcik 1981 suggests, pronounceability should be understood as a function of mental difficulty rather than a physical one (there are expressions in languages which are constrained by these languages' phonotactics, but they are still used e.g. as a result of reductions in casual speech, like English [n̩'les]).

There is some confusion with reference to the *process* vs. *rule* distinction among the critics of Natural Phonology, which, for instance, applies to Hellberg and Anderson as demonstrated in their 1978 and 1981 papers respectively. They do not follow the distinction, which inevitably results in faulty argumentation. They argue against the natural phonetic motivation of certain "processes" which, in fact, have the status of rules in the languages cited: " 'unnatural' properties of *rules* (emphasis mine ) do not refute , but confirm the predictions of Natural Phonology " (Dressler 1984:48).

Presenting the claims of Natural Phonology, Hellberg gives the following interpretation to the fact that processes reflect constraints on pronounceability: inputs to natural rules (i.e. Stampe's processes) should *not* (emphasis mine ) be pronounceable in the language. Stampe, however, requires underlying representations (as well as phonemes) to be pronounceable in principle.

Examples of rule telescoping and different synchronic versus diachronic motivation of proceses are also brought about in Hellberg's and Anderson's papers as arguments against the phonetic motivaton of language phenomena. Again, they appear to have overlooked the distinction between a process and a process morphologized into a rule, the latter of which may either loose its previous phonetic motivation and/or acquire a new one (cf. also Dressler's 1984 discussion of the issue).

Another erroneous path is to recognize a systematic phonemic representation in natural phonological derivatons. This is pointed out by Wójcik as one of the misconceptions of Natural Phonology (e.g. in Rhodes' or Bjarkman's view of the model). Stampe prefers to talk of permanent representations of sounds in the speaker's memory rather than of levels at all.

Finally, as Wójcik also points out, the naturalists' view of the competence/performance issue helps in better understanding of the nature of language than, for instance, in the case of the generativists who "are unable to explain the facts, so they hide behind the competence/performance distinction" (Wójcik 1981: 644). An essential consequence of refuting this distinction is the recognition of the importance of *substantive evidence* for a theory of phonology. As stressed by Dressler (cf. 2.2.) *substantive evidence* underlying Natural Phonology originating in language acquisition, sociophonology, aphasia and other speech disorders, loan phonology, contrastive phonology and others, is *not external* to the theory, as Anderson implies in the conclusion of his 1981 paper, but constitutes its principal area of investigation.

*2.4.* The other theoretical framework employed in the present thesis is that of the social psychology of language. It is hoped that the inevitability of resorting to this discipline while discussing second language acquisition will become clear below.

Social psychology is the study of an individual's behaviour in his/her social context (cf. e.g. Giles 1979). Language behaviour constitutes one important way in which people influence others through both decoding and encoding information in a linguistic form. Speech variables determine to a large extent one's evaluation of others (decoding) and one matches a way of speaking with a given social context (encoding).

The social psychological approach to language is based on two major premises: that language and society are *inter*dependent, and that language behaviour depends on how speakers *cognitively represent* their social and psychological characteristics.

Being a particular case of language behaviour, second language learning is a social psychological phenomenon and should be approached as such. It is mediated by a range of cognitive representations beyond the concepts of other language–related disciplines (cf. Gardner 1985).

There are four common themes reccurring in most second language acquisition models conceived so far (Gardner 1985 presents seven models). These are: motivation, the social nature of the motivation, implications of second language acquisition, and the complex, non–unitary nature of language proficiency.

Each of these models belongs to a descriptive category. Gardner 1985, however, advocates focus on empirical investigation in order to equip his model with predictive power. There are several concepts involved in his research:

(1) *attitudes*;

He defines an individual's attitude as "an evaluative reaction to some referent or attitude object, inferred on the basis of the individual's beliefs or opinions about the referent" (Gardner 1985: 9). Attitudes toward another language community matter in second language learning as the latter consists in acquiring part of a different culture (&, thus, differs essentially from other learning). Other influential attitudes may be those toward the second language itself (including aesthetics) or toward the language learning situation (especially in a formal setting where a teacher and a given course are involved). The above mentioned attitudes are classified as *specific* as

opposed to the *general* which do not focus on any salient referent e.g. ethnocentrism, xenophobia or interest in foreign languages.

Attitudes relate to behaviour. This relationship depends on the relevance of a particular attitude to particular pattern of behaviour: e.g. the attitude of a Pole studying English toward this language would be more relevant to his achievement in English than his attitude toward French or German.

(2) *motivation*;

Gardner emphasises the complexity of motivation: it is composed of effort, want and affect. Therefore, he defines motivation as "the desire to achieve the goal and favourable attitudes toward the goal linked with the effort or the drive" (Gardner 1985: 11). None of these components alone suffices for a person to be called a motivated learner.

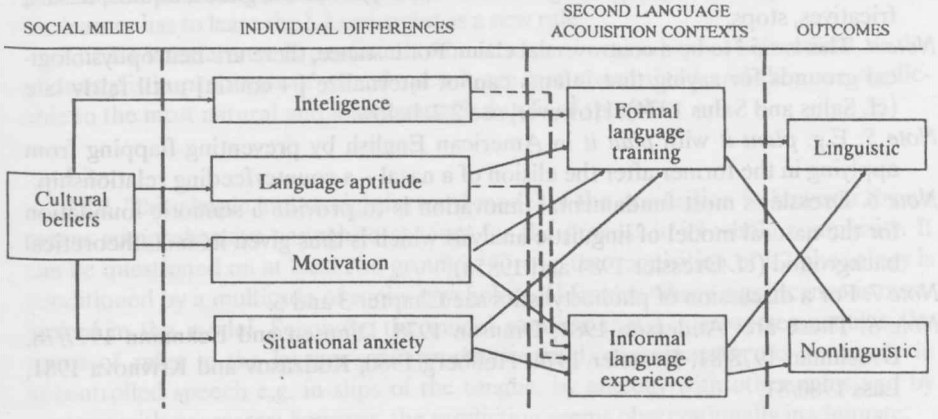
(3) *orientation*;

The fact of possessing a goal is justifiable by an individual's orientation which might be either *integrative* or *instrumental*. As far as second language acquisition is concerned, the former signifies the learner's desire to integrate with another language community, and the latter – for instance, the learner's purpose to obtain a good job.

(4) *achievement*;

What is meant by achievement in second language learning is not only obtaining a high level of linguistic competence or, even, communicative competence in a foreign language, but also a desire on the part of the learners to improve their knowledge and proficiency in the language learned through interaction with the native speakers of this language.

A final outcome of Gardner's research is the empirically founded socio–educational model of second language acquisition. It is amenable to verification as its variables can be operationalized and tested. Below, the model is presented after Gardner 1985:147 (or Gardner 1979).




Schematic representation of the theoretical model.

A brief comment on the model is in order here. Second language acquisition takes place in the social context of a given community. Therefore, the background of the beliefs common in this community relating, in general, to language learning is bound to influence acquisition.

Irrespective of the community, there are four types of individual characteristics which determine the acquisition process and its results: intelligence, language aptitude, motivation and situational anxiety. Attitudes are not specified in the model because they are interpreted as determinants of motivation and not of the final outcome of the acquisition process i.e. achievement.

The role of particular individual differences varies depending on the context of acquisition. All four variables are relevant in a formal setting whose essential aspect is instruction. This is not the case, however, in an informal setting: motivation and situational anxiety definitely dominate the other two factors when formal instruction is not involved. Moreover, the acquisition contexts are not homogeneous and, consequently, influence the roles of individual differences in a multivariate manner.

The model represents a cause–&–effect pattern which groups it among functionally oriented paradigms from a methodological point of view. Therefore, its predictions and explanations are compatible with the ones of Natural Phonology, the latter being a functional framework as well. Also, the fact that Natural Phonology emphasises the importance of substantive evidence which is supplied, among others, by the social psychology of language, renders the two models concerned relatable. Consequently, in the present work, both models are employed in constructing a hypothesis concerning the acquisition of second language phonology as well as in accounting for the selected second language acquisition data.

**Notes**

*Note 1.* Other developments of the theory are enumerated by Dressler (1987:366).

*Note 2.* See Ch.3 for a discussion of these terms.

*Note 3.* Sonority hierarchy (from high to low sonority) : vowels, glides, liquids, nasals, fricatives, stops.

*Note 4.* This is said to be a controversial claim. For instance, there are neurophysiological grounds for saying that infants cannot internalize [+contin] until fairly late (cf. Salus and Salus 1974). However, see 2.2. below.

*Note 5.* E.g. *plant it* with *plan it* in American English by preventing flapping from applying in the former after the elision of a nasal – a counterfeeding relationship.

*Note 6.* Dressler's most fundamental innovation is to provide a semiotic foundation for the natural model of linguistic analysis which is thus given its metatheoretical background (cf. Dressler 1984 and 1985a).

*Note 7.* For a discussion of phonostylistics see Chapter 3 and 6.

*Note 8.* These are: Anderson 1981, Dinnsen 1978, Dinnsen and Eckmann 1977/78, Drachman 1978/81, Dressler 1974, Hellberg 1980, Kodzasov and Krivnova 1981, Lass 1980/81.

Chapter 3

# Hypothesis

*3.0.* The present chapter is devoted to hypothesising on the nature and mechanism of second language acquisition in the light of Natural Phonology. Firstly, a direct prediction concerning the acquisition process of a second language is drawn from the model. Secondly, a modification of the latter suggested by the author and intended for testing in this thesis is presented. Thirdly, Dressler's model of (mor)phonology is proposed as a suitable framework for the analysis of a multitude of conditioning factors in second language acquisition.

Moreover, the terminology used in the work which is relevant to the later discussion,e.g. the notion of casual speech or of the setting of acquisition, is explained and elaborated on.

*3.1.* The model of Natural Phonology is easily applicable to the situation of an adult L2 (second language hereafter) learner. His phonological system is much reduced in comparison with that of a child, and comprises only selected processes and underlying representations together with learned rules. It is this native system that is confronted with foreign language requirements. L1 (first language hereafter) processes are subconsciously applied by the learner to L2 strings, which results in interference in L2 unless a native process happens to be identical with one selected to operate in L2. When the L1 system of the learner lacks some process operating in L2, he has to learn it, in the same way as he learns L2 rules. If the processes happen to be differently limited in the two languages, the learner has to learn the L2 constraint as a new rule.

The L1 interference is predicted to be stronger in casual speech situations, as the phonostylistic processes of casual speech are less constrained and they are applicable to the most natural and least controlled style of speech.

*3.2.*

*3.2.1.* This simple and straightforward model of the acquisition is, however, by no means comprehensive enough to account for the process in its whole complexity. It can be questioned on at least two grounds. Firstly, the acquisition of L2 phonology is conditioned by a multitude of socio–psychological factors whose significance is overlooked in the model. Secondly, the model predicts that L2 processes acquire the status of rules in the learner's L2 production and, consequently, do not apply in uncontrolled speech e.g. in slips of the tongue, by analogy with other rules and by contrast with processes; however, the prediction seems observationally inadequate.

The setting in which a language is acquired – formal or natural <NOTE 1> – may constitute a demarcation line between two different groups of learners. It is not only the presence or lack of instruction that leads to different degrees of achievement within the two groups – this would be a decisive factor if other determinants were of equal value. The other conditioning factors, however, are usually quite discrepant and, also, play different roles in the respective settings.

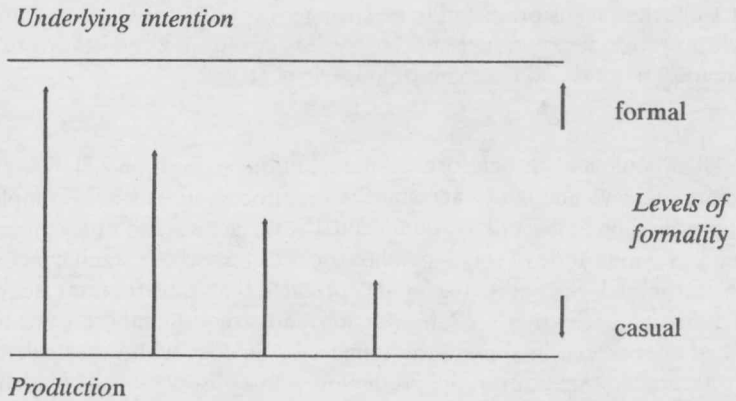
The most important factors are (cf. 2.4.): the attitude of the learner towards the language learned and to its speakers which is partly responsible for the learner's motivation for learning the language; the purpose of learning the language which influences his orientation; and the aptitude of the learner for learning in general and for studying languages in particular.

Motivation and orientation can be predicted to be far from similar in the two settings. Aptitude, on the other hand, plays a different role in each of them.

One may hypothesize that, depending on the value of the above factors, the learners in the two settings acquire foreign language phonology by using different mechanisms. In the case of formal setting learners the mechanism may be conscious learning of both processes and rules. On the contrary, natural setting learners may "employ" subconscious acquisition, in the child's fashion, leading to the reactivation in the learners' minds of natural phonological processes which have been passive since the time first language acquisition finished. Alternatively, the learning procedure may be homogenous for the learners of both settings : they learn by observation and immitation (the formal setting learners are richer by instruction), while they differ largely in the level of achievement, with favourable conditions being usually on the formal setting learners' side.

The latter suggestion is favoured by the author. Both, however, are subjected to testing in the subsequent chapters.

Irrespective of the nature of the acquisition mechanism, it is uniform for all phonological processes i.e. obligatory, optional and phonostylistic. The term *phonostylistic* is used here, after Dressler 1985, to denote style–dependent phonological processes. In this work, only the basic style differentiation is utilised i.e. formal vs. casual. Phonostylistic variation as a phenomenon is understood as follows:



The underlying sound intention is the same irrespective of the style used by the speaker (in his native tongue); however, it is reached to varying degrees in particular styles, the biggest gap between production and intention existing in casual speech.

The learner's ultimate aim (of which he is not aware) is to "decipher" the foreign language intention level. Approaching this aim is an individual endeavour: the task may be made easier for the learner in a formal setting by supplying him with proper instruction; in a natural setting the task may be harder if the learner is exposed predominantly to casual speech effectively masking the underlying intention. In the latter case, the learner matches his foreign language perceptions to the native intention.

Phonological processes, as stated above, are all learned. The question arises, then, as to which of them are learned easier and with greater success. One possible prediction would be that, since the learner strives both to be understood and to understand, the processes which serve optimal perception (perceptual salience) i.e. fortitions, would be more accessible to him. As for rules, they should be learned more easily than processes because this is the way they are naturally acquired. "It is easier to learn a rule as a rule than to learn a process as a rule" seems an obvious prediction of Natural Phonology.

Besides the main acquisition mechanism, there exists at least one more way in which L2 processes find their place in the learner's foreign language speech. The learner learns frequently used lexical items containing the process outputs. This refers especially to those applications of phonostylistic processes which have become lexicalized, and, therefore, function style–independently. The lexicalizations originate mainly in casual speech which itself deserves a brief comment (see below).

*3.2.2.* The character of a speech situation depends, among other things, on such factors as the topic of conversation, the relationship with the interlocutor(s), the place of the conversation, personal characteristics of the speakers and the like. The situation which speakers enter most often is a casual speech one. It does not require of the speaker any special control of his linguistic performance, which makes him pay very little attention to pronunciation. The low level of attention triggers the application of the processes serving ease of articulation – casual speech lenitions.

Speed of delivery constitutes another dimension in casual speech. It usually correlates in an inversely proportional manner with attention: the higher the attention level the lower the speed. This, however, is not a constant. In casual speech, when there is little attention paid to the way of speaking, speed might well stay low. Consequently, speed is a factor involved in a one–way implication: high speed implies the application of certain assimilatory processes contingent upon the inertia of articulators, but not the opposite : the application of these processes does not imply that the utterances in which they occur have been produced with high speed.

There are instances in the literature of maintaining the distinction between fast and casual speech processes or rate– and register–sensitive ones (cf. Hasegawa 1979, Kaisse 1985 or Kerswill and Wright 1987) as well as of approaching speed and casualness inseparably (cf. Dressler 1985, Shockey 1987 or Ramsaran 1978). The former position is untenable unless the role of speed is understood in the sense

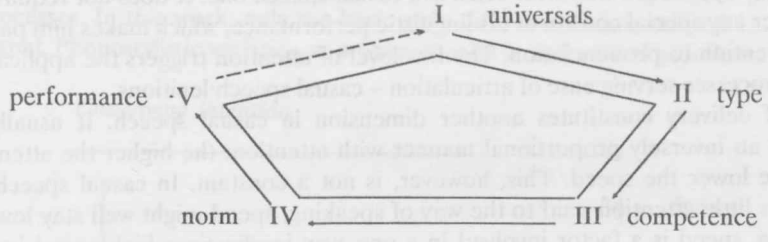
described above. Although from a physiological point of view, theoretically, high speed of delivery does favour the application of some processes (articulators cannot "make it"), still this kind of exclusively physiological conditioning does not belong to speech reality. As Shockey puts it : "human beings probably do not...ever speak so fast that it's impossible for them to realize all the phonetic distinctions which would be present in a slow version" (Shockey 1987: 223).

As for the latter position, the fact that speed does not operate independently as a process trigger can be exemplified by an experiment presented at the conference on speech variation in Stockholm (Dressler, personal communication). Two subjects were applying consistently *different* reductions in the fastest rendering of a test sentence.

Coming back to attention, it varies both paradigmatically and syntagmatically. Paradigmatically, the level of attention decides the style of speech e.g. high level of attention renders the style formal. Syntagmatically, within a given style attention may drop or increase e.g. for a time span of one word. Thus, for instance, in a casual style (overall attention low) it may be drawn to an informationally loaded word <NOTE 2>; or, in a formal style (attention high) it may decrease for a frequently used word, which ultimately leads to lexicalization of this particular item.

All that has been said about casual speech processes refers to native speech. A major problem with the acquisition of those processes by the second language learner consists in the fact that the level of attention in foreign speech does not drop low enough for the processes to apply in a natural way. They are learned and, if at all, applied, semi–consciously or in a semi–controlled manner.

*3.3.* Dressler's model of morphonology can serve as a framework for a comprehensive treatment of the acquisition mechanism as conditioned by linguistic and extralinguistic factors, with emphasis on similarities and differences, and thus possibilities of transfer, between L1 and L2.




Model of morphonology (Dressler 1985: 292).

Below I list some issues which can be investigated within each of the components of the model and, consequently, add to the understanding of the acquisition mechanism.

*Universals* – the fact and extent of sharing certain universal processes by L1 and L2;

*Type* – differences in type between L1 and L2, which might influence, for instance, the ease with which an L2 learner acquires morphonological rules;

*Competence* – language universals are differently constrained by the L1 and L2 specific systems. Is the learner able to return to his pre–native language stage in order to acquire another competence i.e. in order to repeat the limitation of universal processes in a second language manner ?

*Norms* – the impact of social backgrounds of L1 and L2 on the course of the acquisition;

*Performance*– the influence of psycholinguistic factors responsible for individual differences between performance in L1 and L2.

The subsequent chapters are devoted to testing and discussion of the hypothesis formulated in the present one.

**Notes**

*Note 1.* By *Formal setting* I mean any teacher–based training course in a second language; by *natural setting* – the acquisition of a second language in a second language speaking country through every day interactions with the speakers i.e. for purely communicative purposes.

*Note 2.* cf. Madelska 1987.

Chapter 4

# Description of experiments

*4.0.* In order to test the hypothesis set out in *Chapter Three* I conducted seven experiments of different scope and orientation. Hereafter, the experiments will be presented according to a uniform pattern (although not necessarily in the same sequence): the kind and amount of materials, the number and characteristics of the subjects, the place and manner of administration and the equipment used, and the specific aims of particular experiments corroborating the principal goal.

Five of the experiments focused on the investigation of speech production and two of them concentrated on perception. The former group will be described first.

*4.1.* One experiment with the widest scope and, therefore, expected to provide the largest corpus of data, consisted in recording each subject producing about 15–20 minutes of speech stimulated by a specially prepared text. The text included a short instruction followed by three separate tasks and a story (see Appendix 1).

Three alternative versions of task 1 were prepared for different groups of subjects: one was addressed to natural–setting learners (Appendix 1) ; another one was intended for formal setting learners (Appendix 1A); and the third one was designed for English majors (non–native) (Appendix 1B).

The answers to task 1 were meant to serve as guidelines to the estimation of the level of motivation involved in the subjects' learning of English, as well as to give information concerning the subjects themselves and their studying of English. Also, they represented a sample of spontaneous talking.

Tasks number 2 and 3 supplied samples of reading, reading with repetition and retelling. Additionally, task 2 was specially designed to examine the degree of application of phonostylistic processes ( i.e. style–dependent ones ), which could easily find a triggering/feeding ground in the supplied phrases, as well as the application of some obligatory ( style–independent ) processes.

Unprepared reading and summarizing in task 3 allowed for the verification of the already observed tendencies of a given speaker.

The subjects were asked to make their recordings without preparation and *alone*. An interview, conducted in three cases, turned out to be a much more stress–inducing and artificial situation than a recording of one's own speech done in a more relaxed manner – alone. The latter was, in fact, nearer to an everyday interaction in an English speaking environment than a conversation with a Pole in English.

Thus, both the content and the circumstances of the recordings were kept uniform for all subjects in order to form grounds for a valid comparison between particular performances leading to a postulation of relative differences &/or similarities between them (cf. also Preisler 1986: 46ff). < NOTE 1 >

The experiment involved 41 subjects: 20 formal setting learners and 21 natural setting learners.

The formal setting subjects were within an age range of 15 to 50. 7 of them were secondary school pupils, 5 were people of different professions who had studied English for at least a few years, 4 were English majors teaching at a university , 3 were students of and one was a graduate in English studies.

The natural setting learners ranged in age from 8 to 72. The length of their stay in London, as they all lived there, varied within the limits of 5 to 44 years. Professionally, their distribution was the following: 6 office clerks, 3 engineers, 2 librarians and a mathematician, a statistician, a gardner, a retired soldier, a chemist, a civil servant, a book–keeper, a mobility officer for the blind and 2 school children.

The data were subject to a two–fold analysis: auditory with control listeners < NOTE 2 > and acoustic – spectrograms have been produced either to confirm or to verify the results of the auditory analysis. < NOTE 3 >

*4.2.* The purpose of another experiment was to examine the learners' use of a subgroup of phonostylistic processes of English – casual speech processes. The subjects were asked to read a short dialogue ( Appendix 2 )– in pairs, and a set of 21 short phrases ( cf. Appendix 1 ) – individually, with the following instructions in mind: to read the dialogue quickly and in the most casual way possible ( they were allowed to read it silently beforehand ) and to read the phrases as quickly as possible (each of them three times).

The reading sessions took place in an anechoic chamber in order to obtain good quality recordings.

There exist, however, certain unavoidable drawbacks connected with the collection of casual speech data. Casual speech situations are those in which an experimenter is an intruder. Moreover, they can hardly be arranged in an anechoic room. < NOTE 4 > Still a further difficulty is connected with obtaining *non–native* casual speech data.

Acknowledging these drawbacks should not prevent one from investigating casual speech. In the present experiment, according to the principle mentioned in 4.1. (cf. Note 1), it was assumed that: identical conditions of the recordings for all subjects rendered the results for particular speakers and processes comparable, and that tendencies noticeable for the sample, especially if matched by observational data (cf. the end of this chapter), did bear significance with respect to testing the hypothesis on the acquisition of foreign language phonostylistics.

As for the subjects in the experiment, among 33 of them, 22 were Polish – all of them students of English in their first year. The remaining group consisted of speakers of different nationalities (&, thus, native languages) i.e. Austrian, Spanish, Chinese, Japanese and Korean. Although the present work deals with the acquisition of English

by Poles, the above group was included in the investigation in order to find out about possible universal traits in the SL acquisition procedure. 3 native speakers of English, performing the same task in identical circumstances, served as a control group.

The recordings were analyzed auditorily by the author and one phonetically trained control listener.

*4.3.* The next experiment focused on the application of phonological processes to slips of the tongue. More specifically, the application of the selected phonological processes of English in slips of the tongue produced by Polish learners in English was examined.

Existing data comprise errors made by speakers in their native tongues. A new collection, then, would be necessary for the sake of the present study. Collecting non–native language slips, however, would be a time–consuming task. <NOTE 5>

Therefore, I decided to elicit slips of the tongue from Poles having a very good command of English. Already in 1966 Cohen assumed (Cohen 1966: 90) that errors could be induced under favourable experimental conditions and he elicited slips from speakers by instructing them to read texts. Both Sturtevant and Wells maintain that speech errors are non–random and predictable. Wells went as far as to state the laws predicting the form of blends ( cf.Wells 1951). Fromkin observes that "one finds that *intentional errors* usually follow the same *rules* as do non–intentional errors."(Fromkin 1971: 217).

Shattuck–Hufnagel has also been conducting speech–error elicitation experiments in order to test hypotheses formulated on the basis of spontaneous speech data (cf. Shattuck–Hufnagel 1987).

Guided by the above considerations, the experiment proceeded as follows: firstly, a native speaker of English was asked to produce a possible slip of the tongue immediately after hearing each of the 53 target sound strings, i.e. only the first automatic association counted as the nearest to a natural error (when no time was left for any conscious analysis of the string). Secondly, two Polish speakers were asked to read, in a natural way, several English sentences for the sake of supplying a reference sample demonstrating the speakers' use of four selected processes of English < NOTE 6>. Thirdly, the Polish subjects were given the same task as the native speaker.

All responses were recorded in phonetic transcription – narrower with respect to the selected processes.

The stimuli were so constructed as to allow for the investigation of two situations: A. when the context for a given process arises in a slip (i.e. the process does not apply to the original string) B. when contexts are rearranged in a slip, so that some processes are readjusted (in a native performance, at least) and some are not fed any more. Situations A and B may also cooccur.

In view of A and B, the following questions concerning the SL learner's performance were asked: firstly, in case A, whether the required processes were applied; secondly, in case B, whether the processes applying to the target string stopped working in a slip, whether the output features of those processes were moved with segments, and whether these features were preserved with different segments but

in the same positions in the string; and, finally, whether the phonetic behaviour of the SL learner manifested other qualities, different from the expected ones.

*4.4.* The last but one of the production experiments was devoted to the examination of vocal fold vibration in the production of the selected English and Polish speakers. The main aim was to discover whether the Polish learners of English might deviate from their fundamental frequency patterning when speaking the language learned.

The healthy larynx of any speaker pronouncing e.g. a clear long [a] sound produces a vibration which, when recorded as a waveform, has a characteristic shape with repeatable features (the so called Lx waveform). Consequently, fundamental frequency (Fx) histograms obtained from Lx waveforms also manifest characteristic properties similar for all normal healthy speakers. Differences have been found , however, in preferred Fx modes in particular languages (cf. Fourcin 1981: 126). This, among other things, might account for the tendency for learners of foreign languages to deviate from their characteristic pattern while speaking the language learned.

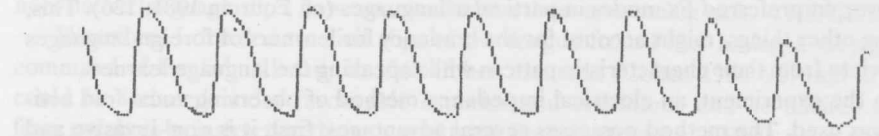
In the experiment, an electrical impedance method of observing vocal fold activity was used. The method possesses several advantages: first, it is non–invasive and thus relatively easily applicable (although even then it is difficult to persuade some speakers to place the electrodes correctly); second, a resulting Lx waveform is unaffected by any acoustic noise; third, Lx can be recorded on unsophisticated equipment.

A device used to monitor the varying impedance of vibrating vocal folds is an electrolaryngograph consisiting of two electrodes applied superficially to the neck on both sides of thyroid cartilage. The resulting output waveform is recorded on one track of a tape while the other track is occupied by a speech waveform (Sp) from a microphone.

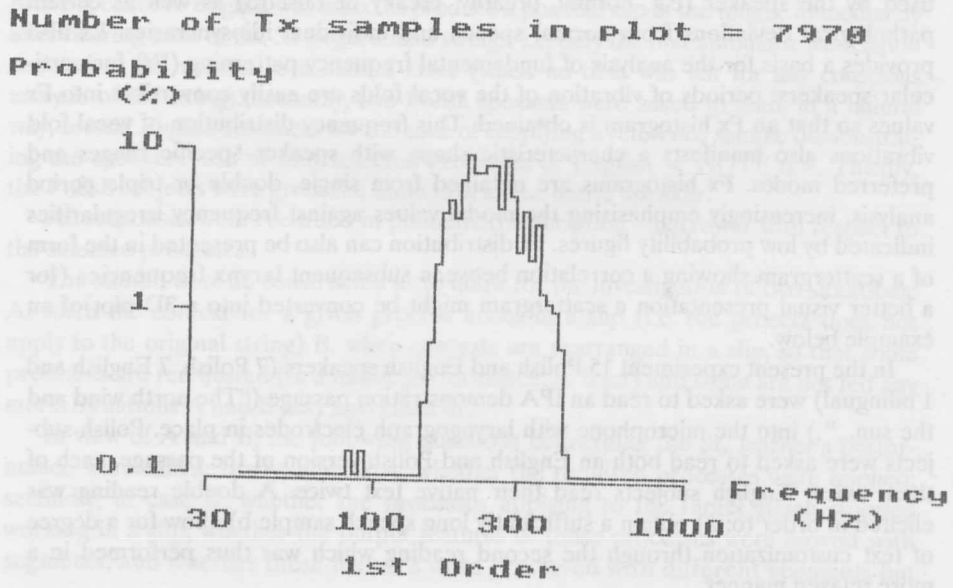
The Lx waveform manifests characteristic features indicating the voice quality used by the speaker (e.g. normal, breathy, creaky or falsetto) as well as certain pathological deviations from normal speech and individual idiosyncrasies. Lx also provides a basis for the analysis of fundamental frequency patterning (Fx) for particular speakers: periods of vibration of the vocal folds are easily convertible into Fx values so that an Fx histogram is obtained. This frequency distribution of vocal fold vibrations also manifests a characteristic shape with speaker–specific ranges and preferred modes. Fx histograms are obtained from single, double or triple period analysis, increasingly emphasising the modal values against frequency irregularities indicated by low probability figures. Fx distribution can also be presented in the form of a scattergram showing a correlation between subsequent larynx frequencies (for a better visual presentation a scattergram might be converted into a 3D plot)of an example below.

In the present experiment 15 Polish and English speakers (7 Polish, 7 English and 1 bilingual) were asked to read an IPA demonstration passage ("The north wind and the sun..." ) into the microphone with laryngograph electrodes in place. Polish subjects were asked to read both an English and Polish version of the passage, each of them twice; English subjects read their native text twice. A double reading was elicited in order to: a) obtain a sufficiently long speech sample b) allow for a degree of text customization through the second reading which was thus performed in a more relaxed manner.

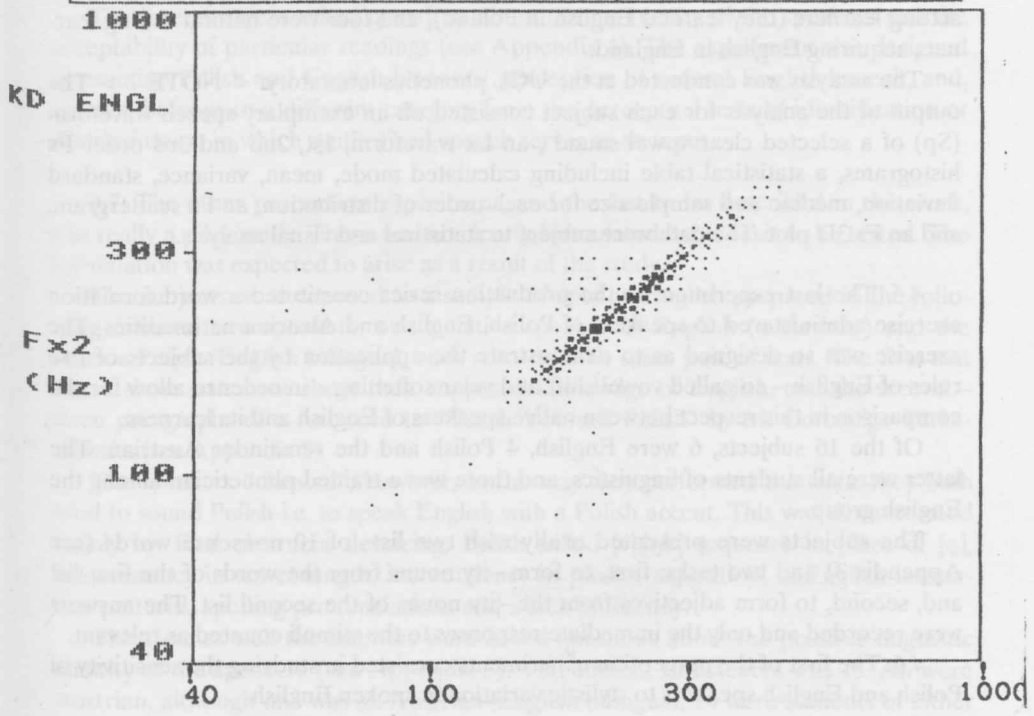
speech

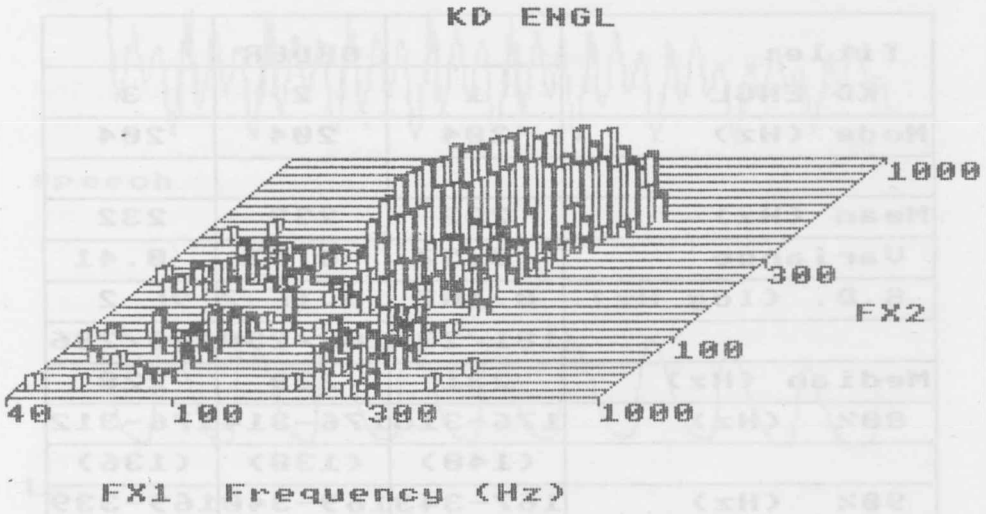


Lx


Number of Tx samples in plot = 7970
Probability
(%)
10
1
0.1
30
100
300
1000
Frequency
(Hz)
1st Order

| Title: KD ENGL | ORDER 1 | 2 | 3 |
|---|---|---|---|
| Mode (Hz) | 204 | 204 | 204 |
| | | | |
| Mean (Hz) | 232 | 233 | 232 |
| Variance | 0.57 | 0.42 | 0.41 |
| S.D. (log Hz) | 0.107 | 9.1E-2 | 9E-2 |
| | 181/297 | 188/288 | 188/286 |
| Median (Hz) | 231 | 229 | 228 |
| 80% (Hz) | 176-316 | 176-314 | 176-312 |
| | (140) | (138) | (136) |
| 90% (Hz) | 167-343 | 169-340 | 169-339 |
| | (176) | (171) | (170) |
| SAMPLE SIZE | 7970 | 4795 | 3337 |






English subjects were all speakers of a broadly defined RP i.e. with, at the most, slight residues of a different accent. Among the polish subjects, three were formal setting learners (they learned English in Poland), and four were natural setting learners acquiring English in England.

The analysis was conducted at the UCL phonetics laboratory. < NOTE 7 > The output of the analysis for each subject consisted of: an exemplary speech waveform (Sp) of a selected clear vowel sound , an Lx waveform, 1st, 2nd and 3rd order Fx histograms, a statistical table including calculated mode, mean, variance, standard deviation, median and sample size for each order of distribution, an Fx scattergram, and an Fx 3D plot. The data were subject to statistical and visual analysis.

*4.5.* The last experiment in the production series constituted a word formation exercise administered to speakers of Polish, English and Austrian nationalities. The exercise was so designed as to demonstrate the application by the subjects of two rules of English – so called vowel shift and velar softening – in order to allow for the comparison in this respect between native speakers of English and its learners.

Of the 16 subjects, 6 were English, 4 Polish and the remainder Austrian. The latter were all students of linguistics, and there was a trained phonetician among the English group.

The subjects were presented orally with two lists of 10 nonsense words (see Appendix 3) and two tasks: first, to form –ity nouns from the words of the first list and, second, to form adjectives from the –ity nouns of the second list. The answers were recorded and only the immediate responses to the stimuli counted as relevant.

*4.6.* The first of the perception experiments consisted in studying the sensitivity of Polish and English speakers to stylistic variation in spoken English.

Listeners were selected according to three basic criteria: nationality – Polish vs. English; phonetic knowledge – phonetically trained vs. phonetically naive; and, for Polish subjects, setting in which they acquired English – natural vs. formal.

Out of fourteen subjects, half were English, the other half Polish; among the Polish group 2 persons were phonetically trained and, together with another 3, were formal setting learners, while the remaining 2 were natural setting learners. There were two phonetically trained subjects in the English group, all the members of which spoke broadly defined RP.

The listeners were exposed to a text consisting of 21 short phrases used also in other experiments (cf. Appendix 1). In this case, however, the set of phrases was recorded < NOTE 8 > in five different versions (every phrase being repeated three times).

*Reading I* was recorded by a native speaker of English in his natural casual way of speaking.

*Reading II* was recorded by the same speaker in a more careful and articulate style.

*Reading III* was recorded by the same speaker, with purposeful random omission of certain both obligatory and phonostylistic processes of English phonology applicable to the strings concerned (being a phonetician the speaker was capable of performing this operation).

*Reading IV* was performed by a Polish speaker of English in a mode parallel to that of *Reading I*.

*Reading V* was performed by the same speaker in a mode parallel to *Reading II* (as if a paragon for students of English).

The listeners were asked questions about the nationality of the speakers and the acceptability of particular readings (see Appendix 4). The experiment was designed to examine Polish and English listeners' perception of natural English speech, and, as such, belongs to a different category from the perceptual tests of identification or discrimination in which synthesized speech serves as an input.

*4.7.* The other perception experiment, and the last to be described in this work, was really a pilot study. There was no clearly formulated hypothesis to be tested. The formulation was expected to arise as a result of the study.

The subjects were exposed to a sample of spoken English prepared in the following manner: two speakers, one a native speaker of English (a slavisist) and the other a Polish–English bilingual, both recorded the same pair of texts. The first text was a short statement about their supposed knowledge of English, and the second – three paragraphs of a foreword to "Teach Yourself Polish" by M. Corbridge–Patkaniowska (see Appendix 5).

The speakers "cheated", however, in the way they performed the texts: they both tried to sound Polish i.e. to speak English with a Polish accent. This was demonstrated mainly by: final obstruent devoicing, Polish trilled [r],[ŋk] sequence in place of [ŋ], inconsistency in vowel length, inconsistency in plosive aspiration, unEnglish intonation patterns, spelling pronunciations and a lack of fluency.

This time as well the listeners were asked questions about the possible linguistic identity of the speakers (see Appendix 5). The number of listeners was 15. All were Austrian, although one was an Austrian–English bilingual; 14 were students of either

linguistics or English at the University of Vienna, and one was an assistant lecturer at the Department of English.

*4.8.* Personal observations, which are usually less objective but more natural than rigorously designed and controlled studies, contributed a supplement to the experimental data. They were conducted by the author mainly during her one year stay in London and consisted in taking notes of the relevant strings of sounds encountered either on TV and Radio or in everyday interactions with speakers of English.

**Notes**

*Note 1.* This, in fact, was a guiding principle in all the experiments.

*Note 2.* Control listening was done by three phonetically trained listeners of Polish nationality, graduates of English philology and employed in this department. They were asked to listen for the presence or absence of the specified processes in the phrases produced by one of the subjects. The results correlated with the results of the author's auditory analysis by, respectively, 73%, 81% and 83%. The greatest discrepancies occurred in phrases number 9 and 12 (*Don't be...; Don't miss...*) which might confirm a possibility for assimilation to be a gradual process going through the stage when relevant features of both an assimilating and assimilated segment are present in the latter (& are, therefore, difficult to discern).

*Note 3.* The spectrographic analysis was performed on a Sona–Graph 6061 B, 85–16000 Hz Spectrum Analyzer (Kay Elemetrics) using a range from 80 to 8000 Hz and 500 Hz calibration for the production of wide–band spectrograms (300 Hz band–pass filter). The recorder used was a Basf 8200 Hi Fi Stereo Deck Cr O2.

*Note 4.* There have been attempts at obtaining real casual speech in these circumstances e.g. leaving subjects unexpectedly in an anechoic chamber under the pretext of forgetting the materials to be read by them, and recording their conversation meanwhile; or sitting with subjects in the chamber, trying to involve them in a lively conversation on some catchy topic. These, however, may very easily fail: one might wait long to get a stretch of connected speech in the former case, and in the latter – subjects might resist indulging themselves in a natural conversation in the claustrophobic atmosphere of an anechoic room.

*Note 5.* I have observed only a few relevant examples so far:

| | |
|---|---|
| *tip of the tongue* | [ tʰʌp əv ðə tʰiŋ ] |
| *suit* | [ tjus ] |
| *very well* | [ weri vel ] |
| *first things* | [ fɛ:ŋ θist ] |
| *eight, nine* | [ ɔin nait ] |
| *fish species* | [ fis ʃpi:ʃ i:z ] |
| *recapitulate* | [ ri:kə 'tʰipjuleit ] |
| housewife | [ haufwais ] |
| *bacon and eggs* | [ eikən n begz ] |

*Note 6.* The following sentences were used:

1. Put pen to paper.
2. Would you like a piece of cake ?
3. I've met Peter at the station.
4. Ask me in case you need it.
5. The door opened suddenly.
6. Has your letter come ?
7. Tell me what you want.

*Note 7.* All recordings were done on a professional Marantz cassette recorder with the use of a dynamic microphone and a laryngograph set designed in the Department of Phonetics at University College London. Recorded waveforms were analyzed by means of a waveforms and Lx distribution programme on a BBC Master Series microcomputer with an input coming from an Uher CR 240 filtered through telequipment S61 due to which a visual representation of Lx and Fx could be seen.

*Note 8.* Recordings took place in a sound–proof room (at the UCL phonetics lab).

Chapter 5

# Analysis and discussion of the experimental data

*5.0.* In the present chapter the data obtained from particular experiments will be analyzed in the order of presentation of Chapter Five. For each experiment, auxiliary questions, principles &/or assumptions applied in the analysis will be specified first, and a display or a description and a systematic discussion of the results will follow.

*5.1.* In order to impose certain limits on the analysis of a large corpus of data of experiment 1, I concentrated on a selected number of phonological processes to be examined:

a) *context–sensitive* processes including: obligatory i.e. style–independent processes of plosive aspiration, word–final obstruent devoicing and [ŋ] formation; optional style–independent sandhi processes of linking and intrusive r; and optional style–dependent processes of palatalization <NOTE 1>, nasal assimilation, non-continuant assimilation and plosive deletion.

b) *context–free* processes responsible for the structure of the segments [θ], [ð], [r] and for vowel discrimination.

A style used by the subjects in the recordings could be judged from the amount of attention paid to the production of speech (cf. Vanecek and Dressler 1982). It was assumed that the level of attention would be higher in reading a text than in retelling it or talking about oneself. As for the triple reading of short phrases, subjects were supposed to concentrate on three different renderings of each phrase, which quite often, in fact, resulted in changes of style (e.g. very slow and articulate vs. careless and rapid). On the whole, some stylistic variation was expected to occur in the recordings, although without any clear–cut border–lines between particular styles. Also, the stylistic extremes were not presupposed to appear as the situation was neither formal nor casual enough. Taking into account the kind of stylistic instability described, style–dependent processes (in this study only some induced by casual styles) had to be considered.

*5.1.1.* The aspiration of an initial plosive was at least *twice* as frequent for the foreign setting learners than for the native setting learners in phrases number 1, 2, 3,

4, 6, 16, 20 and 21. (In 5 and 8 it was just more frequent). As for the absolute number of occurrences, it was most frequent in phrases 1, 2, 4, and 21. The occurrence of aspiration depended to some extent on phrase or sentence stress: the syllables containing aspirated plosives were those accented by the speakers.

For aspiration to appear at all in Poles' English, the suppressed process has to be *uninhibited* or reawakened to be able to operate. Uninhibiting of a process comes about most effectively through conscious and painstaking learning of a language, which was demonstrated in a wide discrepancy observed between the FSLs and NSLs' productions in favour of the former.

An additional explanation for aspiration being more frequent in the FSLs' speech requires a previous assumption that aspiration, rather than being an accompanying feature of a plosive, is a segment itself (cf. Pettorino et al 1984). As is shown by the study of segment acquisition (cf. below), the FSLs tend to acquire segments more effectively than the NSLs do. This may be due to the fact that foreign segments are pointed out to them by the teacher and they are corrected when they mispronounce them. This may also imply that context–free processes in general are more susceptible to unsuppression as they are not context–biased in the way context–sensitive processes are.

*5.1.2.* Consonant devoicing in Polish is limited to apply to obstruents in word–final position. A task for the Polish learner of English, then, is to suppress the limited process. This is an area of strong interference in the English of Poles. Again, FSLs coped with the task better through persistent monitoring of their pronunciation, which was confirmed e.g. by phrase number 3 or a few evident cases of conscious control over final voicing employed by the speakers throughout the recordings. This, however, refers predominantly to the subjects who studied English (i.e. philologists).

In sum, in the performance of 18 speakers (10 NSLs and 8 FSLs) one could encounter examples of devoicing of any obstruent in any word–final context. 6 speakers presented cases of constrained devoicing and here one could point to the following universally phonetically plausible hierarchies of application: firstly, the number of devoiced fricatives was higher than the number of devoiced stops; secondly, devoicing took place word–finally but not in a consonant cluster – C C; [+vd]
thirdly, it did not take place when pronunciation was noticeably controlled; and, finally, it did not take place in an accented position in a sentence.

*5.1.3.* Throughout the phrases, there are only five examples of linking r (all by the FSLs), and a single example of intrusive r (by a bilingual child). For Poles, the only helpful indicator for linking r to appear is spelling. A lot of learners, however, do introduce [r] everywhere it appears in spelling. Only some FSLs, those persistent in persuing a native–like pronunciation, manage to learn to apply linking r consistently, and, gradually, even intrusive r, in relevant contexts.

The status of linking and intrusive r used to be a disputable matter. One could suggest the following development of the process: historically, into an r–full accent,

r–deletion was introduced in preconsonantal contexts, but not intervocalically as [r] was *functionally* suitable there serving the ease of articulation. Afterwards, intrusive r appeared by analogy for the same purpose. The intervocalic r, thus, changed its status to an insertion. Synchronically, it is a morphonological sandhi process serving pronounceability i.e. with an existent phonetic motivation, but it is language–specific and, thus, not necessarily exceptionless for every native speaker.

*5.1.4.* As far as the style–dependent processes are concerned <Note 2> , the subjects generally proved to be using whatever they had learned no matter the style, unless they consciously tried to manipulate the way they spoke.

*5.1.4.1.* Palatalization of alveolars before Yod (always more frequent in the FSLs' speech) occurred mainly in phrase number 4 (23 subjects) in the context *what you want*. This may be explained by the fact that the process of English phonostylistic palatalization underwent lexicalization before items like *you, your,* and *year* while it still operates productively before other, less common, words beginning with Yod. Therefore, the subjects learned certain lexical items with palatalization present and were unable to apply it consistently in other contexts where its environment is met.

To unsuppress the process, the learners would have to be often involved in extremely casual speech situations. This does not really happen, even in the case of the natural setting subjects recorded: they form a close Polish community and restrain from personal contacts with the English speaking "outside".

*5.1.4.2.* Noncontinuant assimilation and final stop deletion, or stop deletion alone, applied in the function of cluster simplification after a nasal. Simultaneously, noncontinuant assimilation creates an environment for anticipatory nasal assimilation which, however, is strongly interfered with Polish gliding and vowel nasalization. The latter two processes are very hard to limit – a few FSLs partly succeeded. Phrases number 9, 12 and 18 were most often rendered as [$\tilde{V}$ $\tilde{w}$] followed by a difficult to identify closure of the lips, sometimes giving an impression of an oral sound, sometimes of a nasal one.

When a vowel preceding a nasal was not similar to Polish [ɛ] or [ɔ] (which are vowels undergoing nasalization) <NOTE 3>, then there was no interference and nasal assimilation often applied undisturbed e.g. in phrases 5 and 8.

*5.1.5.* Finally, let us examine the subjects' renderings of the selected English segments:

<th> i.e. [θ] and [ð] – substitutions were rarely consistent for a given speaker (fricatives or plosives, alveolar or labiodental).

[ŋ] – in the phrases, 28 subjects substituted a cluster [ŋk] for a velar nasal. A process of g–deletion is suppressed in Polish and, thus, the learners intuitively aim at [ŋg] cluster in English which feeds Polish word–final obstruent devoicing to give [ŋk].

[r] – 16 NSLs produced a trill (less often a tap) in place of an English retroflex in an r–full manner. *None* of the FSLs did. The latter effectively unsuppressed a segment structure process giving a retroflex – being presented (by a teacher) with a ready model. Moreover, they were quite consistent in either an r–full or an r–less (majority) accent. The former understood English approximant as an intention for a trill (which is universally the most natural intention) and, therefore, ended up, most often, with a Polish trill in all contexts suggested by spelling.

As for vowel discrimination, twice as many NSLs as FSLs did not distinguish between the vowels in *cup* and *cap*. They have not been taught the distinction. Thus their strategy was to aim at the most similar vowel which happened to be [a] – as if a natural context–free process of vowels merging to [a] was reawakened.

*5.1.6.* One more remark concerning the distinction between the formal and natural setting of acquisition is in order. It refers to attitude and purpose and, thus, motivation as conditioning factors of acquisition.

The examined FSLs had generally a more positive attitude to learning English: they liked the language aesthetically, they judged it to be useful, good for communication, but also for education and entertainment. They were not forced to study it. Their motivation, therefore, was high.

Most of the recorded NSLs learned English solely for communicative purposes – they were forced to learn it in order to survive. This refers, first of all, to the older generation (WW II or post–war emmigrants) the representatives of which still cultivate Polish as "the only" language and avoid speaking English as much as possible while living in London for fourty odd years. Already the later emmigrants, who had usually studied some English before coming to England, or at least had been superficially familiar with the language as it has become very popular in Poland since the post–war years, show a higher motivation for perfecting their English speech than their elders. These facts strongly point out to the importance of the setting in the acquisition process of a second language phonology.

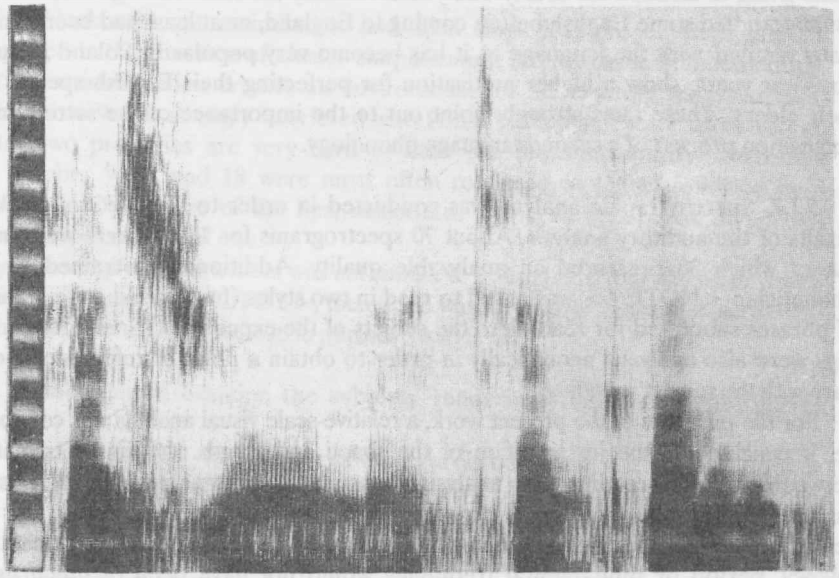
*5.1.7.* Spectrographic analysis was conducted in order to be able to check the results of the auditory analysis. About 70 spectrograms for 18 speakers were made, out of which 38 presented an analyzable quality. Additionally a trained English phonetician <NOTE 4> was asked to read in two styles (formal and casual) the set of phrases submitted for reading to the subjets of the experiment. Some of his readings were also analyzed acoustically in order to obtain a point of reference to compare with the subject's readings.

For the purposes of the present work, a relative-scale visual analysis was conducted, i.e. it consisted in the juxtaposition of the shape and length of formant transitions between particular readings. No analysis in absolute terms was performed, as is was assumed to be inadequate for the material collected. Also with respect to the processes investigated in the experiment, the measurable parameters of formant frequency, period or fundamental frequency would not have been of much use in isolation. They would require a larger comparative study.

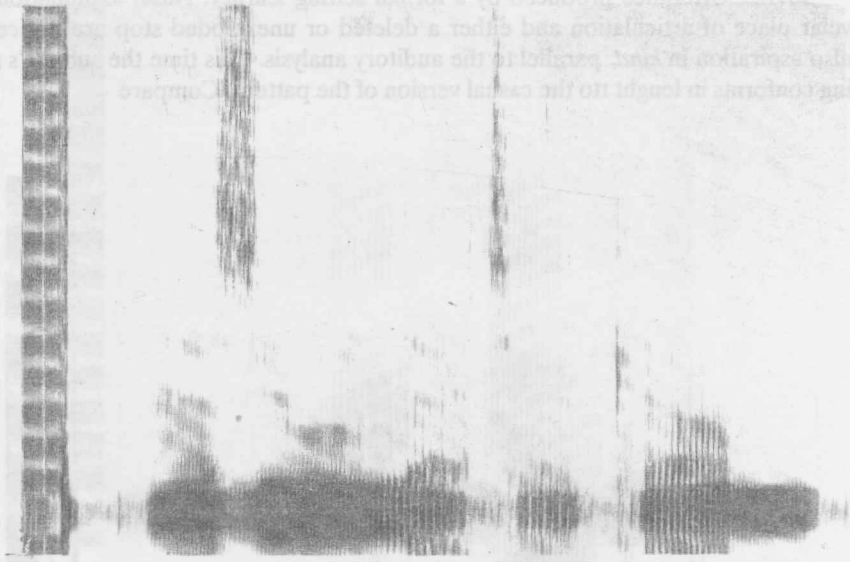
Below, eight examples of phrases uttered by six speakers will be presented and discussed, four of them also in relation to the pattern produced by the phonetician. 30 further spectrograms are included in the accompanying data volume. The latter also contains the results obtained from the laryngographic analysis conducted for the purposes of experiment 4.

*5.1.7.1.* Utterance produced by a formal setting learner. Palatalization and the lack of final devoicing in *has your*, and aspiration in *come* are visible, which agrees with the auditory analysis.

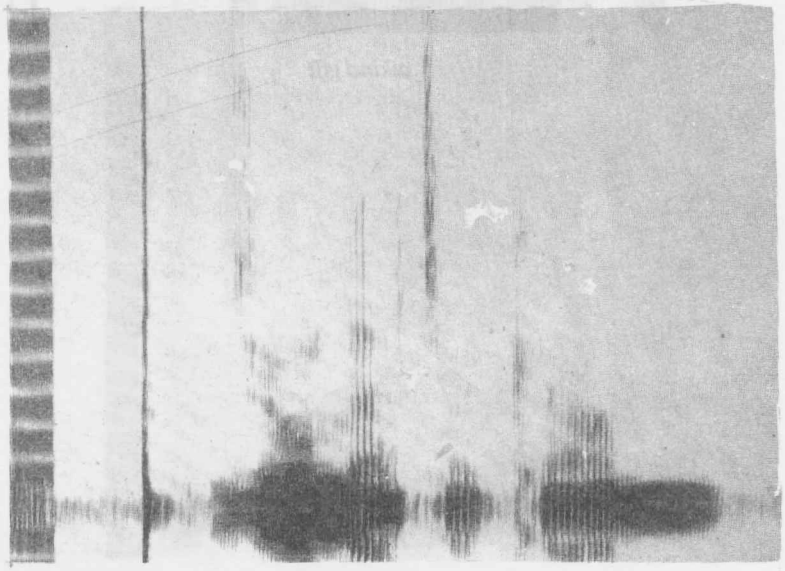
The subject's reading conforms in duration to the careful version of the pattern. However, it demonstrates a casual speech process (palatalization), notably absent from the casual pattern.



*Has your letter come?*



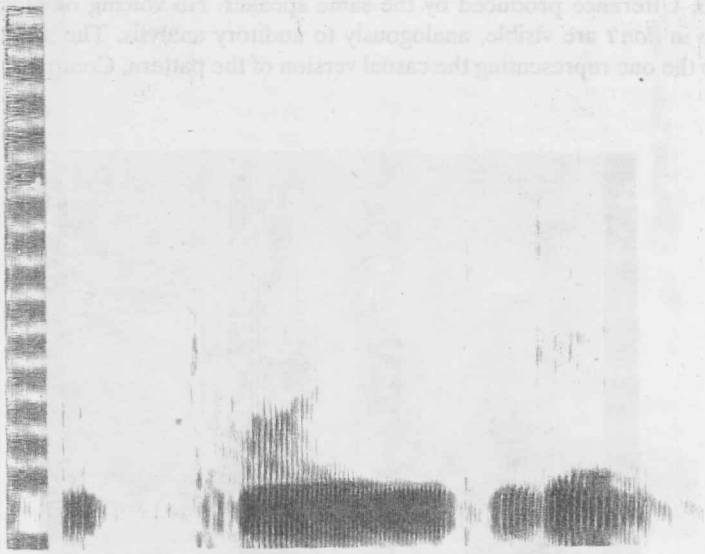
*Has your letter come?*
Careful version of the pattern.



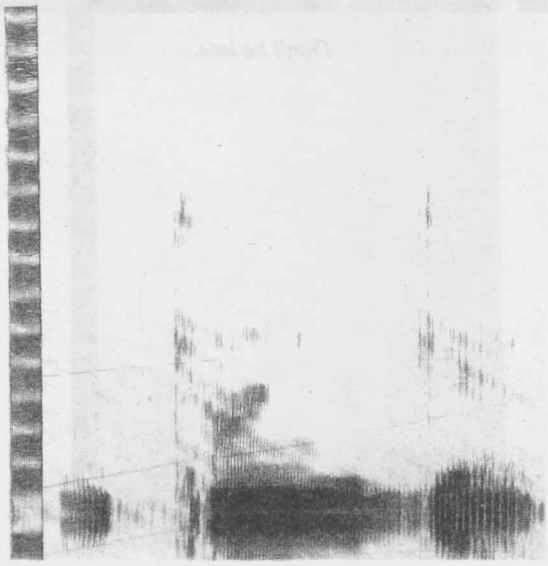
*Has your letter come?*
Casual version of the pattern.

*5.7.1.2.* Utterance produced by a formal setting learner. Nasal assimilation to a velar place of articulation and either a deleted or unexploded stop are noticeable, also aspiration in *kind,* parallel to the auditory analysis. This time the subject's reading conforms in lenght tto the casual version of the pattern. Compare

*a kind gift*

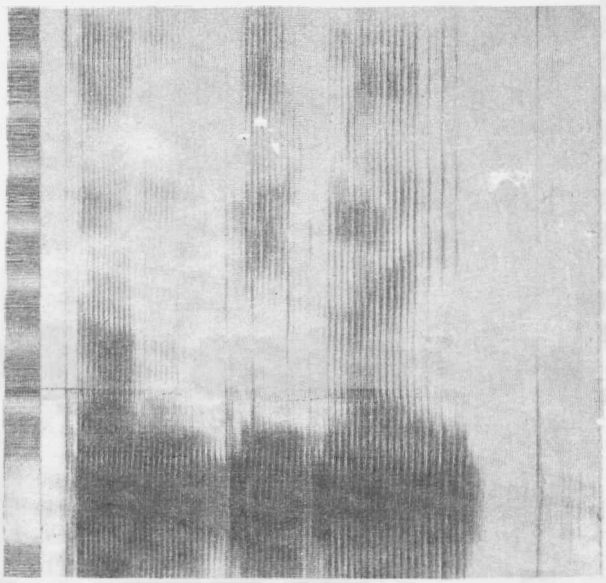


*a kind gift*
Careful version of the pattern

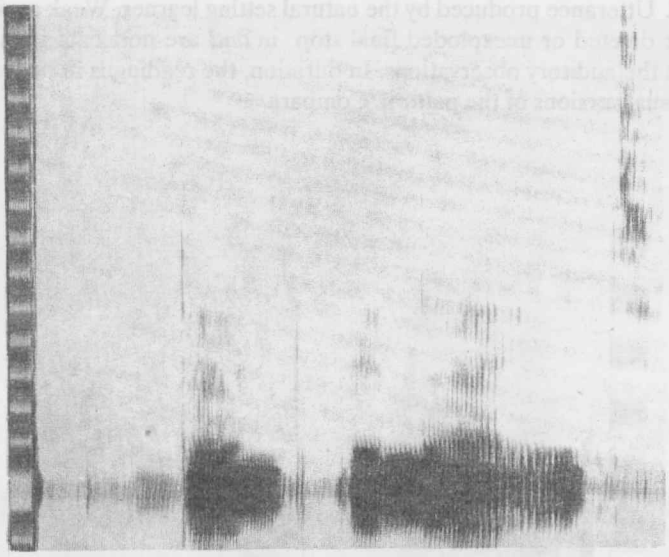


*a kind gift*
Casual version of the pattern.

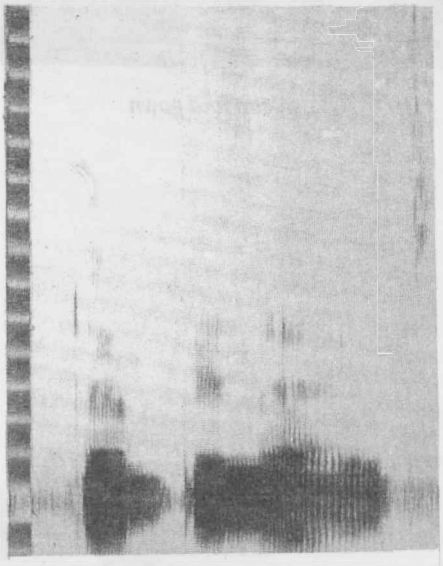
*5.1.7.3.* Utterance produced by the same speaker. No voicing or plosion in the final stop in *don't* are visible, analogously to auditory analysis. The spectrogram is similar to the one representing the casual version of the pattern. Compare



*Don't be late.*

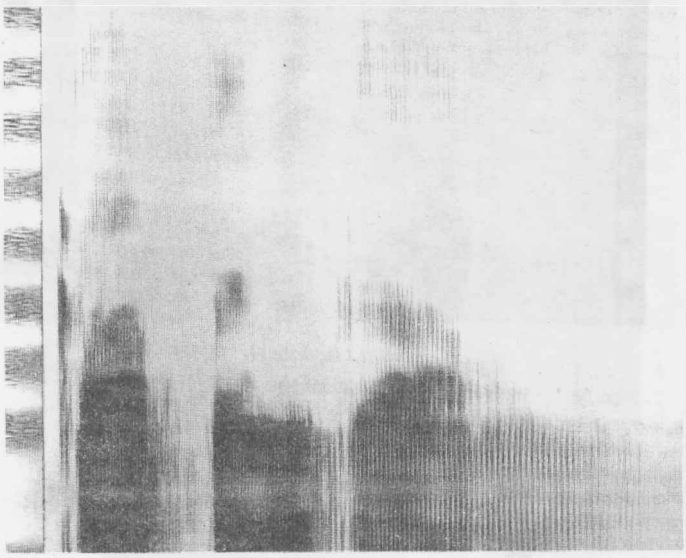


*Don,t be late.*
Careful version of the pattern.

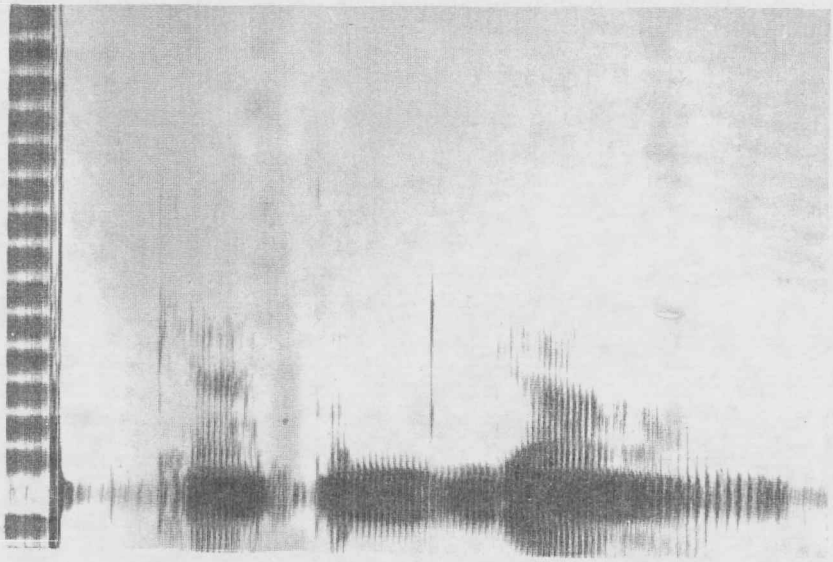


*Don't be late.*
Casual version of the pattern.

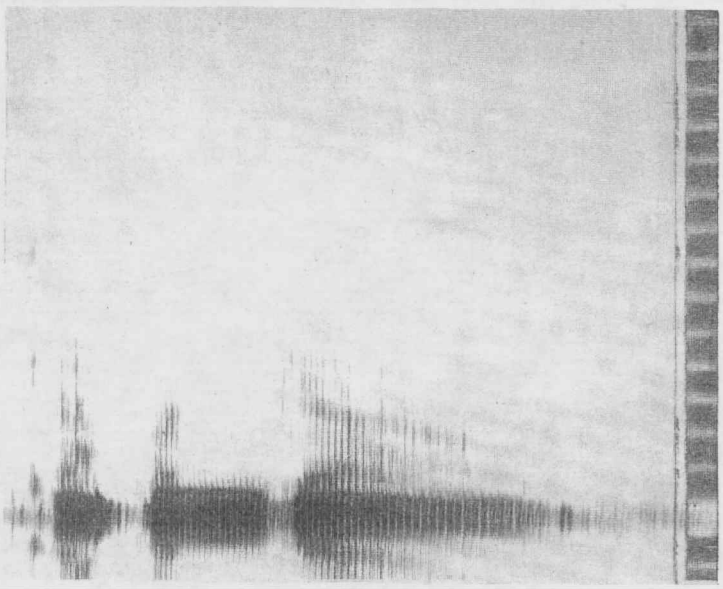
*5.1.7.4.* Utterance produced by the natural setting learner. Weak aspiration in *cap* and either deleted or unexploded final stop in *and* are noticeable, which does not contradict the auditory observations. In duration, the reading is in between the careful and casual versions of the pattern. Compare



*cap and gown*

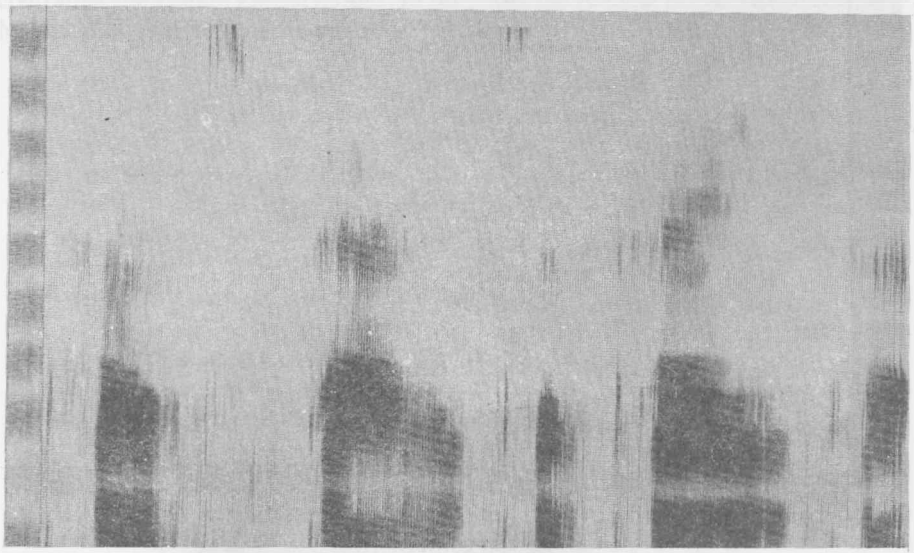


*cap and gown*
Careful version of the pattern.



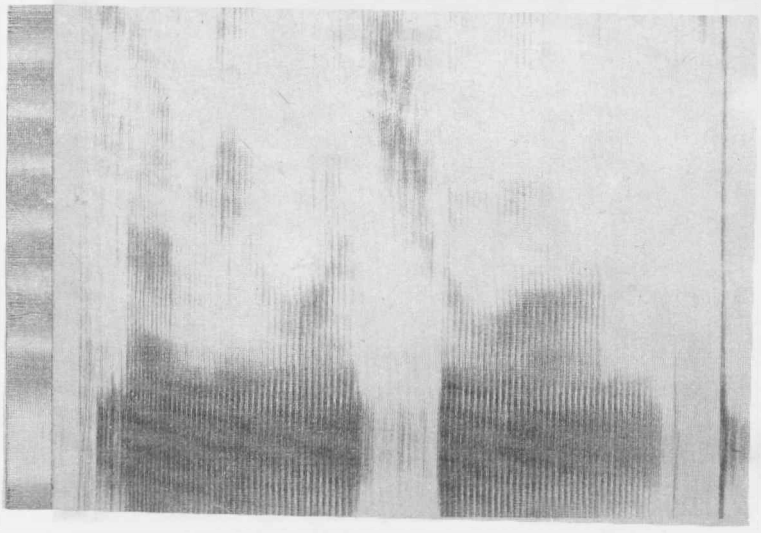
*cap and gown*
Casual version of the pattern.

5.1.7.5. Utterance produced by a natural setting learner. Aspiration of stops is visible throughout, in agreement with the auditory analysis.



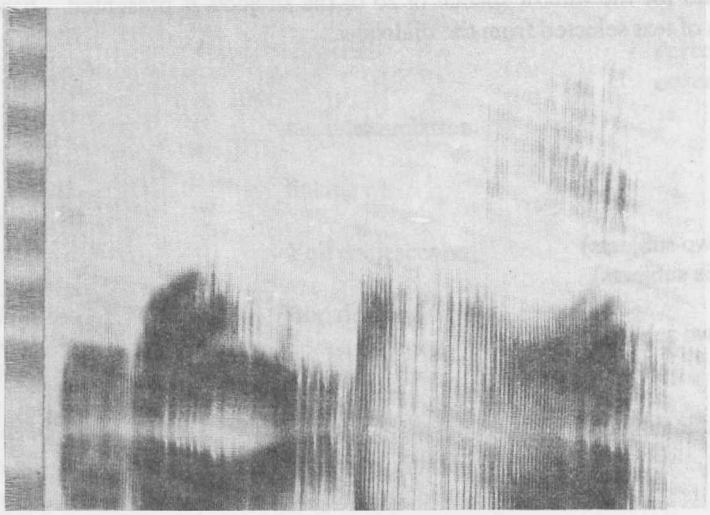
*Put pen to paper.*

*5.1.7.6.* Utterance produced by a formal setting learner. Aspiration on *tell* and *want*, and palatalization in *what you* are observable, as in the auditory analysis.



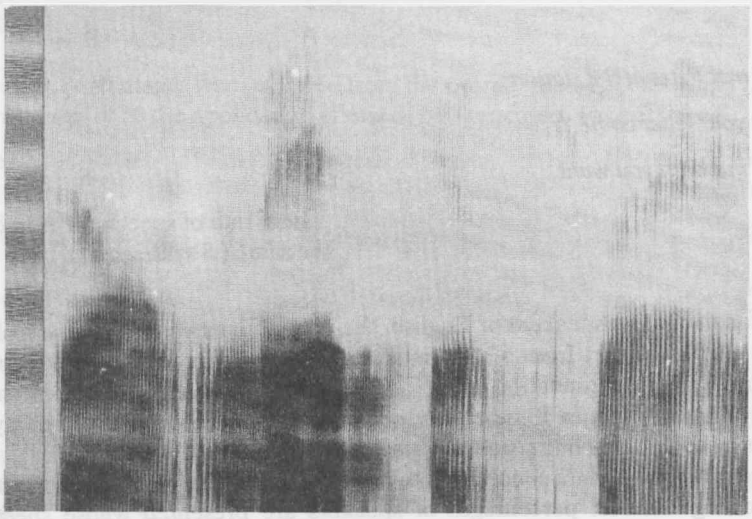
*Tell me what you want.*

*5.1.7.7.* Utterance produced by a formal setting learner. Voicing in place of [t] in *won't* can be seen which corresponds to the auditorily observed nasal gliding.



*He won't buy it.*

*5.1.7.8.* Utterance produced by the same speaker. *don't* similar to the above won't, while the auditory impression included a final [m].



*Don't miss your train.*

5.2. When listening to the recordings of experiment 2 an immediate observation was that although all subjects were given the same instruction *to speak as quickly as possible*, the tempo of some was almost slow. Below, the range of values in syllables per second for the rate of speech of 26 of the subjects is presented – based on two stretches of text selected from the dialogue:

6.5
6.3
5.8
5.6
5.3
4.9 (two subjects)
4.7 (six subjects)
4.4
4.3 (two subjects)
4.2
4.0
3.8 (four subjects)
3.6
2.6
1.7

Thus, "the rapidity of rapid speech" varied from speaker to speaker. This, however, did not impede casualness: phonostylistic processes of casual speech did apply irrespective of speed. For instance:

| | A | B |
|---|---|---|
| *I've met Peter at the station.* | + | – |
| *Has your letter come ?* | + | – |
| *Tell me what you want.* | + | + |

where rate of speech for A and B the same ( 8 sylls/sec )

As for the native speakers of English, the only phonostylistic processes all three of them applied (apart from a style–independent sandhi process of linking r) were the following: nasal assimilation in *triumph* and palatalization ("Yod coalescence") in *Tell me what you want*. In 13 other contexts phonostylistic processes did apply in the readings by two or only one speaker (they could have applied in 26 contexts).

The main body of data concerns non–native subjects. The results are organized in the following manner: percentages of speakers are presented whose speech displayed a phonostylistic process in a given context.

*5.2.1. A dialogue.* A maximum number of potential occurrences of a process in a given phrase throughout all readings was 17. Out of 18 potential contexts in the dialogue, 11 below were affected.

| Context | Process | Percentage of occurrences |
|---|---|---|
| *triumph* [-ŋf] | nasal assimilation | 94.1 |
| *(inquire about)* | linking r | 70.6 |
| *(power assisted)* | – " – | 47.1 |
| *couldn't you* [-tʃ (j)u-] | Yod coalescence | 35.3 |
| *exact colour* [-kˈ k-] | stop deletion | 23.5 |
| *a test drive* [-s d-] | – " – | 16.7 |
| *don't buy* | stop deletion | |
| [-m(p) b-] | nasal assimilation | 11.8 |
| *in case you* [-ʒ j-] | palatalization | 11.8 |
| *a fixed price* [-ks p-] | stop deletion | 11.8 |
| *ten pounds* [-m p-] | nasal assimilation | 5.9 |
| *goodbye* [-bˈ b-] | stop assimilation | 5.9 |

*Phrases*.Percentages were counted from the overall number of speakers i.e. 33. In 14 phrases out of 20 the application of one or two processes was perceived.

| Phrase | Process | Percentage of speakers |
|---|---|---|
| *Tell me what you want.* [-tʃ (j)u-] | Yod coalescence | 48.5 |
| *You musn't over–eat.* [-n̩ əu-][-r-] | t–deletion/linking r | 45.5/33.3 |
| *cap and gown* | stop deletion | |
| [-ŋ g-] | non–contin.assimilation | 36.4 |
| *a kind gift* [-ŋ g-] | – " – | 27.3 |
| *Has your letter come ?* [-ʒ j-] | palatalization | 21.2 |
| *What's your weight ?* [-tʃ j-] | – " – | 15.2 |

| | | |
|---|---|---|
| *St.Paul's Cathedral* | stop deletion | |
| [sm̩ p-] | vowel elision | |
| | nasal assimilation | 12.2 |
| *I can't go* | stop deletion | |
| [-ŋ(k) g-] | non–continuant assimilation | 12.2 |
| *He won't buy it.* | – " – | 12.2 |
| [-m(p)ˈ b-] | | |
| *Don't be late.* | – " – | 12.2 |
| [-m(p) b-] | | |
| *Don't miss your train.* | stop deletion | |
| [-m(p) m-] [-ʃ j-] | non–contin.assimil./palatal. | 12.2/6.1 |
| *He kept quiet.* | stop deletion &/or assimil. | 3 |
| [-pˈ k-] | | |
| [-kˈ k-] | | |
| *cup and saucer* | non–contin. assimil. | 3 |
| [-p m̩-] | | |
| *I've met Peter at the station.* | stop assimil./linking r | 0/3 |
| [-pˈ p-][-r-] | | |

*5.2.2.* Even though rapidity was imposed on the speakers, still their speaking rate remained idiosyncratic. This, however, did not influence the application of phonostylistic processes in either way : the rate of speech alone is not a sufficient condition for casual speech processes to occur.

Native speakers generally applied fewer processes than foreigners. This suggests that, unsurprisingly, they did not find the experimental situation casual enough to trigger a full range of phonostylistic processes of casual speech (cf. levels of formality ch.3). Neither did speed have any impact: they spoke quickly but attentively (cf. an attention approach ch.3.). The consistent occurrence of nasal assimilation in *triumph* and of palatalization in *Tell me what you want* can be accounted for.

The former is conditioned articulatorily (purely phonetically motivated): the vicinity of [m] and [f] in place of articulation makes the nasal assimilate to the following labiodental; moreover, the articulatory configuration of full oral opening for a vowel + complete oral closure and velic opening for a nasal + a narrow oral opening for a fricative is a difficult sequence not only for an English speaker (e.g. Poles share the difficulty) – it requires a concentrated effort on the part of the speaker to produce a clear bilabial nasal with a labiodental fricative next to it. ( BASE of articulation ?)

The latter is best explained as a case of lexicalization of phonostylistic palatalization in a commonly and frequently used phrase (cf. also *Observations* below).

Native speakers' data also demonstrated an idiosyncratic use of phonostylistic processes. This is confirmed by the author's observations (cf. below), and points to a complex conditioning involved in the application of these processes, going beyond pure phonetic criteria e.g. a process may be positively or negatively socially marked for a given speaker.

*5.2.3.* The lack of consistency in the application of phonostylistic processes by the foreign subjects suggests that, firstly, they learned those items which have been lexicalized in English with a process present or which, at least, have been heard by the subjects most often e.g. *Tell me what you want* ; *couldn't you*.

Secondly, even if they have managed to consciously learn some of those processes, they have not achieved the ability to apply them in all relevant environments e.g.

*I can't go* [ ai kʰa:ŋ (k) gəʊ ]

vs.

*He won't buy it* [ hi wəʊnt bai it ]

The phonetic motivation of labiodental assimilation (cf.*triumph*) seems universal and, therefore, the process was applied by the learners in the relevant English strings (cf. also *Observations*).

Individual foreigners demonstrated more phonostylistic casual speech processes in their readings than the native speakers. This proves the lack of precise style differentiation in the learner's speech: its phonological characteristics remain to a large extent constant – the learner puts into practice whatever he has learned no matter the circumstances.

Speakers of six different nationalities revealed similar tendencies with reference to the acquisition of second language phonostylistic processes of casual speech. One may infer, then, that the phonetic motivation of those processes is universally strong and that the non–phonetic i.e. mainly normative and performance factors influencing their application act in a parallel fashion in languages and, consequently, introduce analogous difficulties into the acquisition process of a foreign language.

*5.3.* Four processes were selected for investigation in experiment 3 : aspiration, lack of plosion in plosive clusters, linking and phonostylistic palatalization.

Below, the list of the target strings presented to the subjects is reproduced, together with the form(s) of a slip made by the native speaker (I) and the ones produced by the Polish speakers (II). Only the processes concerned are marked in transcription. The lack of an immediate response is marked by a dash. The list includes two groups of strings divided according to the criteria specified in Ch.4.3.: A and B. More precisely, if one of the investigated processes applies to the target and is also fed by a new context arising in a slip, then the string is grouped under B. If it is only the latter, the string belongs to A. <NOTE 5>

The data demonstrate the following tendencies in the production of slips:

a) the native speaker responded automatically to the majority of the just heard strings, preserving, readjusting or newly applying the processes fed by the slips. This refers to the processes of aspiration and lack of plosion; the insertion of [r] in one of the two examples was hesitant. Unfortunately, no slips involving a context for phonostylistic palatalization were elicited (the only one made was too deliberate and, thus, too slow to be valid).

A

| *Target string* | I *Native speaker* | II *Polish speakers* |
|---|---|---|
| bottom | [ tʰ ɒbm ] | – |
| * *cold feet* | [ fəuld kʰi:t ] | [kʰəu fli:t ] |
| * *the cold shoulder* | [ðe ʃəuld kʰəuldə ] | [ kʰ əu ʃləudə] |
| *a down train* | – | – |
| *ear mended* | [ miər endɪd ] | – |
| *under thunder* | [θʌndə (r) ʌndə ] | – |
| * *he stopped eating* | [ hɪ tʰɒptˈ si:tɪŋ ] | [ tʰɒptˈ sti:tɪŋ ] |
| | [ hɪ ɒpstˈ tʰi:tɪŋ ] | |
| * *parched ear* | – | – |
| *ain't few* | [ feint ju ] | – |
| | (after long deliberation) | |
| *trot in* | – | – |
| *plunge in* | – | – |
| *antepenultimate* | [ pʌntəˈnʌltɪmɪt ] | – |
| *red fuel* | – | [ reftˈ djuəl ] |
| | | [ fred juəl ] |
| *wise tune* | – | – |
| *eat furiously* | – | [ fi:tjɒriəslɪ ] |
| *rest stew* | – | [ tʰest ju: ] |
| * *a corrupt passage* | [ pərʌpˈt kʰæsɪdʒ ] | – |
| * *a right tube* | – | [ braitˈ tju:b ] |

* – a string belongs to both A and B with respect to two or more different processes

B

| *Target string* | I *Native speaker* | II *Polish speakers* |
|---|---|---|
| *a dead colour* | [ə kʰəd dʌlə ] | – |
| *deadpen* | [ depˈden ] | – |
| *slips of the tongue* | [ tʰɪps əʌ ðə slʌŋ ] | [ tʰɪps əʌ ðə slʌŋ ] |
| | | [stɪps əʌ ðə lʌŋ ] |
| *a pretty kettle of fish* | [ kʰɪtɪ pretl ɒf fiʃ ] | [ prɪtɪ fetl əf kʰɪʃ ] |
| *a pretty penny* | [ pʰɪtɪ preni ] | – |
| *rich & poor* | [ pʰɪt n̩ rɔ: ] | [ rɪp n̩ tʃɔ: ] |
| *pins & needles* | [ nɪnz n̩ pʰi:dlz ] | [ ni:nz n̩ pʰɪdlz ] |
| *tooth & nail* | [ nu:θ n̩ tʰeil ] | – |
| *a casting note* | [ ə vd:stɪŋ kʰəut ] | [ ə nɑ:stɪŋ kʰəut ] |
| *the cardinal points* | [ ðə pʰa:dɪnl kʰoints ] | – |

| | | |
|---|---|---|
| *the carrying trade* | – | – |
| *to spy a cat* | [ tə kʰai ə spæt ] | – |
| *to tip a waiter* | [ tə wɪp ə tʰeitə ] | [ tə weit ...] |
| | [ tə weit ə tʰɪpə ] | |
| *fairy tale* | [ tʰeərɪ feil ] | [ tʰeərɪ feil ] |
| *bicycle–pump* | – | – |
| *to fetch a pail of water* | [ tə fetʃ ə weil əf pʰɒtə ] | [tə pʰetʃ ə feil əv wɒtə ] |
| *once I caught a fish alive* | [...ai fɔ:t ə kʰɪʃ ...] | [...ai fɔ:t ə kʰɪʃ ...] |
| *a ready pen* | [ ə pʰedɪ ren ] | [ ə pʰenɪ ren ] |
| *to cook the books* | [ tə buk ðə kʰuks ] | [ tə buk ðə kʰuks ] |
| *to cut a dash* | [ kʰʌʃ ə dæt ] | [ dæt ə kʰæʃ ] |
| *past cure* | [ kʰd:stˈpjɔ: ] | [ kʰd:stˈpjɔ: ] |
| *past hope* | – | [ kʰɑ:st həup ] |
| *to pull a fast one* | [ tə fd:st ə pʰul wʌn ] | [ tə ful...] |
| *under lock & key* | [ ʌndə kʰɒk n̩ li: ] | [ ʌndə kʰɒk n̩ li: ] |

b) Polish speakers responded immediately to much fewer target strings. In the performed slips, however, they seemed to systematically and correctly apply the processes of aspiration and lack of plosion. No slip involving a context for either linking r or phonostylistic palatalization was elicited (Thus, the application of phonostylistic processes in slips still remains to be investigated.) <NOTE 6>.

The above suggests that the learner is able to uninhibit some foreign language processes, at least some obligatory ones, so that they apply in his speech even when he slips. One tangible method leading to this uninhibition turns out to be and motivated learning.

*5.4.* The shape of Lx for a healthy larynx is relatively stable. Therefore, its fundamental frequency distribution also possesses characteristic fixed features : modal peaks and sharp edges. The mode values and frequency range are speaker–specific. Irregularities in the overall shape, however, result from some abnormal voice condition like laryngitis or speech pathologies. Can they as well occur as a consequence of difficulties a learner encounters when speaking a foreign language? Still further, is there a possibility of "mode–switching" for the same speaker dependent on the language he is using? What kind of a relationship holds between physiological limitations on the laryngeal apparatus and linguistic structures? The above were guiding questions to experiment 4.

a) In order to test the null hypothesis about Polish and English demonstrating similar tendencies for preferred fundamental frequency values, the t–test for small independent samples was used. It tests the significance of differences between two means.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(\frac{\sum x_1^2 - (\sum x_1)^2/N_1 + \sum x_2^2 - (\sum x_2)^2/N_2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

where

$\bar{x}_1$ and $\bar{x}_2$ are sample means
$x_1$ and $x_2$ are variables
$N_1$ and $N_2$ are sizes of sample 1 and 2

The value of t was calculated three times using different variables: means, modes and medians from Fx histograms for Polish of the Poles and for English of the English. In all cases it proved non–significant. Thus, the above null hypothesis cannot be rejected: linguistic structures of Polish and English are not distinct enough to introduce significant difference between the Lx's (&, consequently, Fx's) of the respective native–speakers of these languages.

b) A t–test was also used to compare the English of the English subjects with the English of the Poles. The null hypothesis this time was that Poles in general do not alter the output of their vocal fold activity when speaking English. Again, there was no significant basis for accepting any alternative hypothesis.

c) A study of correlation between the Polish and English of the Polish subjects, however, did show a certain tendency for different Fx patterning in some speakers depending on the language spoken. The assessment of correlation was conducted for three cases: correlation between Polish and English for all Polish subjects together ; the correlation for Polish formal setting learners, and the correlation for natural setting learners. The Pearson product–moment correlation coefficient was calculated with the Fx 3rd order mean as a variable.

$$r = \frac{N\Sigma xy - \Sigma x\Sigma y}{\sqrt{\{N\Sigma x^2-(\Sigma x)^2\}\ \{N\Sigma y^2-(\Sigma y)^2\}}}$$

where

x and y are variables
N is a number of pairs of observations

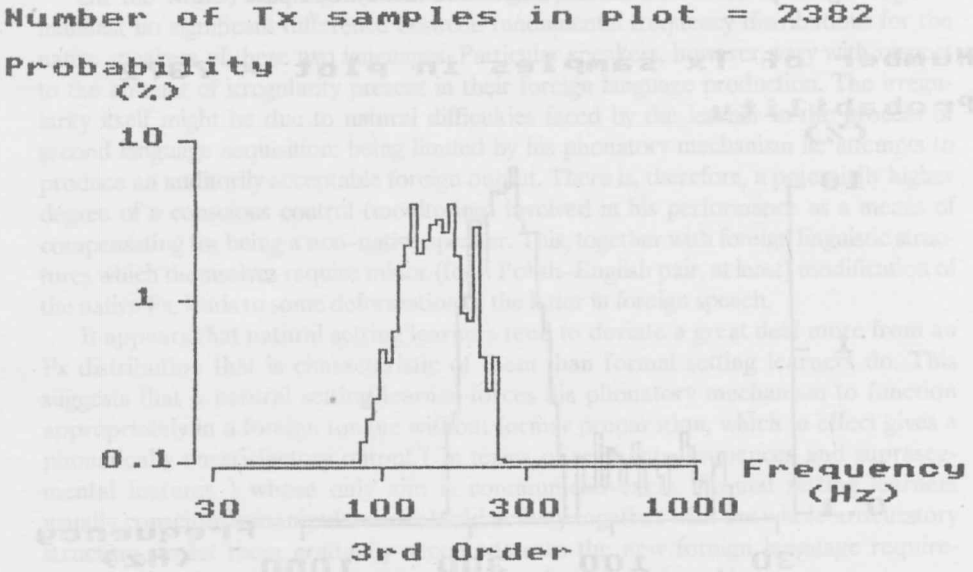
The results are as follows:

1) $r = 0.84$ for the whole group of Poles i.e. there is a significant correlation at the 0.05 level

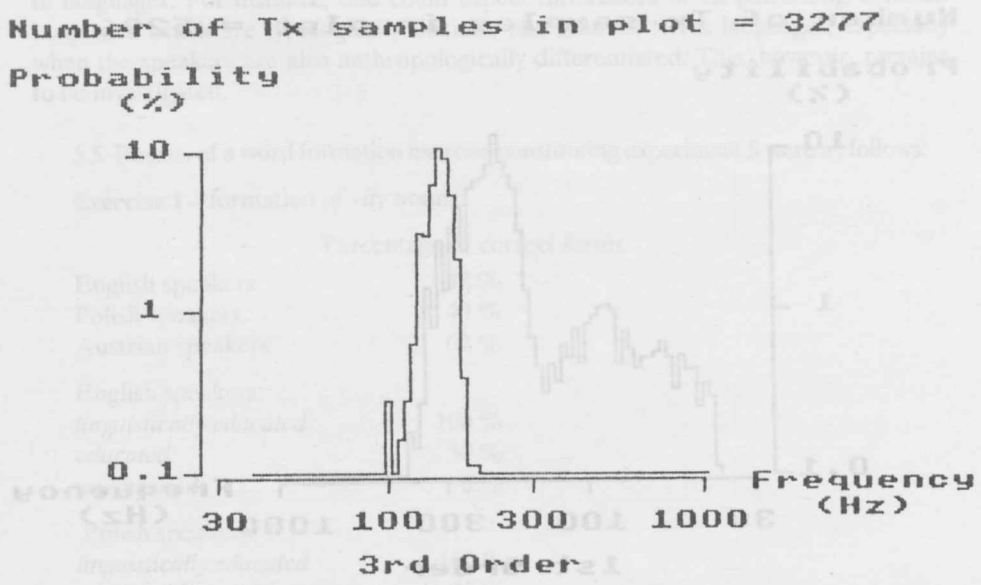
2) $r = 0.999$ for formal setting learners, which shows a strong positive correlation

3) $r = 0.879$ for natural setting learners – significance at 0.20 level only i.e. the probability for correlation is almost 20% lower than in 2).

Visually, English Fx histograms for Poles show some minor divergencies from their Polish counterparts, namely: irregularities in lower frequencies,or higher probabilities for lower frequencies, or a smaller frequency range. Compare an example :

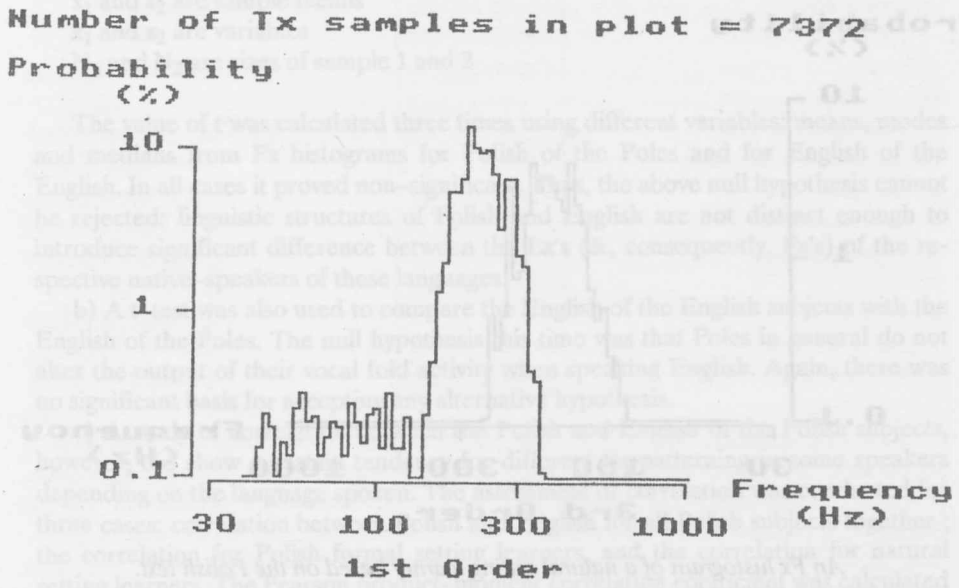



*An Fx histogram of a natural setting learner based on the Polish text.*

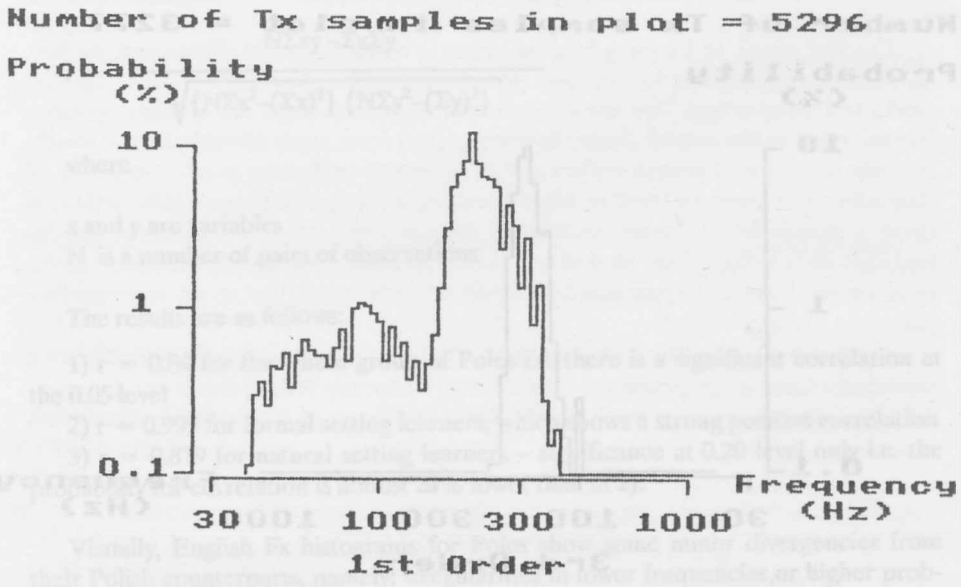



*An Fx histogram of the same learner based on the English text.*

A bilingual speaker demonstrates a similar tendency. Compare below:




*An Fx histogram of a bilingual speaker (born in England) based on the English text.*




*An Fx histogram of the same speaker based on the Polish text.*

On the whole, the English and Polish groups turn out to be similar enough to manifest no significant difference between fundamental frequency distributions for the native speakers of these two languages. Particular speakers, however, vary with respect to the amount of irregularity present in their foreign language production. The irregularity itself might be due to natural difficulties faced by the learner in the process of second language acquisition: being limited by his phonatory mechanism he attempts to produce an auditorily acceptable foreign output. There is, therefore, a potentially higher degree of a conscious control (monitoring) involved in his performance as a means of compensating for being a non–native speaker. This, together with foreign linguistic structures which themselves require minor (for a Polish–English pair, at least) modification of the native Fx, leads to some deformation of the latter in foreign speech.

It appears that natural setting learners tend to deviate a great deal more from an Fx distribution that is characteristic of them than formal setting learners do. This suggests that a natural setting learner forces his phonatory mechanism to function appropriately in a foreign tongue without former preparation, which in effect gives a phonetically unsatisfactory output ( in terms of segments, sequences and suprasegmental features ) whose only aim is communicativeness. Formal setting learners usually consciously manipulate vocal fold activity together with the whole articulatory structure, to let them gradually accomodate to the new foreign language requirements. Consequently, their Lx patterning remains relatively stable.

Naturally, an observation about the lack of statistically significant difference between Polish and English fundamental frequency distributions which would be attributable to language does not presuppose the same state of affairs for any given pair of languages. For instance, one could expect differences in Lx patterning between languages which are typologically distinct, like tone vs. stress languages, especially when the speakers are also anthropologically differentiated. This, however, remains to be investigated.

*5.5.* Results of a word formation exercise constituting experiment 5 were as follows:

**Exercise 1** – formation of *–ity* nouns:

| | Percentage of correct forms |
|---|---|
| English speakers | 48 % |
| Polish speakers | 40 % |
| Austrian speakers | 62 % |
| English speakers: | |
| *linguistically educated* | 100 % |
| *educated* | 50 % |
| *uneducated* | 0 % |
| Polish speakers: | |
| *linguistically educated* | 100 % |
| *educated in a different area* | 25 % |

All Austrian speakers were linguistically educated.

**Exercise 2** – formation of adjectives from *–ity* nouns:

| | Percentage of correct forms |
|---|---|
| English speakers | 23 % |
| Polish speakers | 24 % |
| Austrian speakers | 42 % |
| English speakers: | |
| *linguistically educated* | 60 % |
| *educated* | 15 % |
| *uneducated* | 0 % |
| Polish speakers: | |
| *linguistically educated* | 40 % |
| *educated in a different area* | 20 % |

The results lead to the following observations:

Exercise 1 was significantly easier for all subjects than exercise 2. This suggests that : firstly, the knowledge of the suffix *–ity* by the subjects definitely helped them in a correct formation of the nouns; secondly, they learned to apply the processes of vowel shift and velar softening in the direction required in exercise 1 i.e. to the input containing a velar plosive and a complex vowel nucleus.

Numerous forms (irrespective of nationality) displaying the lack of the application of either vowel shift or velar softening e.g. [fə'rainiti] or [eləp'tikiti] confirm a statement about the different status of these processes in comparison to natural phonological processes : the former have to be learned as morphonological rules and they do not serve any clearly phonetically motivated function; they are not a constraint on pronounceability, and thus may be not exceptionless.

Both learners and native speakers of English manifested the same difficulties in the application of the processes concerned; this was another fact to prove that these processes are uniformly introduced through a controlled learning into either a native speaker's or learner's performance (Stampe's rules).

One factor turned out to be most influential with respect to the application of the two processes, namely education. Linguistically educated speakers were definitely better at word formation (they have been taught how and where to apply it) than the speakers educated in other areas and the uneducated speakers respectively, irrespective of their native tongue <NOTE 7>.

*5.6.* Questions specifically addressed by means of experiment 6 were the following:

1) Which group, English or Polish, is better at perceiving the distinction between careful and casual style of English ?

2) What are the cues for perceiving *Reading III* as unacceptable for English vs. Polish listeners ?

3) Is the notion *acceptable English* synonymous with *native English* for Polish and English subjects ?

4) Which group of Polish learners is more sensitive to the distinctions between the readings: FSLs or NSLs ?

*5.6.1.* Answers to the first question of Task I were the following:

| *Reading* | I | II | III | IV | V |
|---|---|---|---|---|---|
| *Listener* *Pol/Engl* | | | | | |
| 1 | X/X | X/X | X/X | Y/Y | Yv Z/Yv Z |
| 2 | X/X | X/X | X/X | Y/Y | Z/Z |
| 3 | X/X | X/X | X/X | Y/Y | Z/Z |
| 4 | X/X | X/X | X/X | Y/Y | Y/Z |
| 5 | X/X | X/X | X/X | Y/Y | Y/Y |
| 6 | X/X | X/X | X/X | Y/Y (z) | X/Y |
| 7 | X/X | X/X | X/X | X/Y | X/Y |

X, Y, Z signify different persons
() means change of opinion after subsequent listening
1 and 2 are phonetically trained listeners

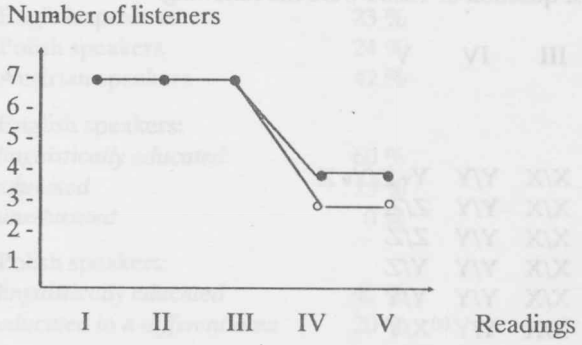
Both Polish and English listeners uniformly recognized the same speaker in the first three readings; all but one listeners also declared the speaker in IV to be a different one; the identity of a speaker in V appeared to be the most troublesome: there was disagreement whether he was one of the previous two or a third.

Answers to question 2 of Task I are presented below:

| *Reading* | I | II | III | IV | V |
|---|---|---|---|---|---|
| *Listener* *Pol/Engl* | | | | | |
| 1 | +/+ | +/+ | +/+ | –/~ | ?–/~ |
| 2 | +/+ | +/+ | +/+ | –/– | –/– |
| 3 | +/+ | +/+ | +/+ | –/+ | ?–/+ |
| 4 | +/+ | +/+ | +/+ | –/+ | –/+ |
| 5 | +/+ | +/+ | +/+ | (-) +/?– | (-) +/?– |
| 6 | +/+ | +/+ | +/+ | +/?+ | +/?+ |
| 7 | +/+ | +/+ | +/+ | +/+ | +/+ |

\+ native speaker of English
– non–native speaker of English
~ not a native speaker of RP, possibly a foreigner
? probably
( ) change of opinion after subsequent listening

Just as with the same/different judgements above, both Polish and English listeners were perfectly consistent in correctly identifying a native speaker in *Readings I, II and III*. As far as *Readings IV and V* were concerned, however, Polish listeners tended to detect a non–native speaker with greater ease than the English did <NOTE 8> – cf. a graph below:




●– English listeners
○– Polish listeners

*Recognition as a native speaker of English*

Answers to Task II questions can be summarized as follows:

*Readings I, II, IV* and *V* were judged as acceptable by all English listeners. By acceptable English they meant standard or near–standard (with dialectal overtones) pronunciation.

Those Polish listeners who recognized a non–native speaker in *IV* and *V* automatically assumed these readings to be unacceptable English. Thus, for them, acceptable English equaled native English.

The following comments were directed to *Reading III* (phoneticians included):

(a) Polish formal setting learners: highly unnatural, overdone careful, in cases unEnglish e.g. no linking r, unEnglish –trilled– r, sequences of exploded plosives, no phonostylistic assimilations with one exception (inconsistency), foreign accent superimposed, lack of aspiration, slow or staccato, no smoothing;

(b) Polish natural setting learners: a mixture of accents of English, too articulate;

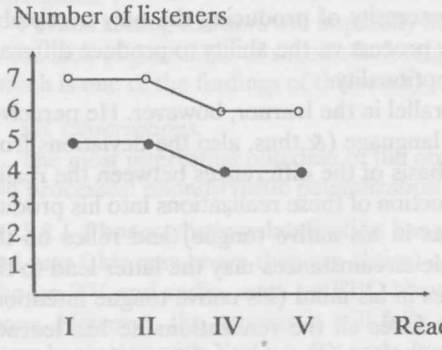
(c) English listeners: unusual way of speaking, partly due to a different accent, odd but acceptable;

unacceptable because a number of phrases are mispronounced e.g. [p] sounds are "too harsh" (i.e. lack of aspiration noticed), trilled r, Indian accent in places;

the reader seems to be deliberately erratic (examples cited by the listener as "erratic" were: "Mishus Young" and "don't mish your train");

more staccato, more careful, initial consonants "more on the teeth".

The correct recognition of casual vs.careful styles of *Readings I, IV vs. II, V* is presented on the graph below:




*Recognition of styles*

Clearly, Polish listeners appear to be almost perfect in the perception of style differences, English listeners being less aware of the distinction <NOTE 9>.

*5.6.2.* In the studied group of 14 subjects, it was Polish formal setting learners who appeared to be most sensitive to the distinctions between readers and styles. This might be explained as due to their preconceived knowledge of those characteristics of a second language that are responsible for casual vs. careful style differentiation. Also, in a formal learning/teaching situation the standard pronunciation is the target persued, which makes the learners prone to attribute any deviations from the standard to "foreigness" rather than e.g. to other accents of a second language. This is additionally confirmed in the data by a different understanding of the notion "acceptable English" on the part of Polish vs. English listeners: foreigner's English is not acceptable English according to Polish listeners.

Both English and Polish listeners (especially formal setting learners) detected the lack of some obligatory processes in *Reading III* which manifested itself in "erratic speech". However, only formal setting learners noticed also the non-occurrence of some phonostylistic processes in the reading and the inconsistency of their use on the part of a speaker.

Below, I will try to explain the above results on theoretical grounds.

Native speakers of a language perceive sounds as intentions. In careful style the gap between the intention and its realization is not so wide (they usu differ by a feature e.g. /V/ vs. [$\tilde{V}$] or /C/ vs. [$C^h$]) ; in a casual style the gap may get wider (there may be a segmental difference e.g. /tj/ vs. [tʃj] or /–nt b–/ vs. [–m b–] ).

However, a modification by a feature is always there, while a modification by a segment is optional – style–dependent. Therefore, speakers of a language perceive *the lack* of a feature, while they ignore the lack of a segmental change.

In production, this is parallel to the necessity of producing the only acceptable realization of an intention in an obligatory process vs. the ability to produce different realizations of an intention in the case of optionality.

Production and perception are not parallel in the learner, however. He perceives the realizations of intentions in a foreign language (&,thus, also the deviations from them) and he differentiates styles on the basis of the differences between the realizations. His difficulty consists in the introduction of these realizations into his production: he does not aim at the intention (as in his native tongue) and relies on the results of learning. Only in most favourable circumstances may the latter lead to the unsupression of foreign language processes in his mind (his native tongue intentions will also interfere). Also, he usually introduces all the realizations he has learned simultaneously (because he perceives them in this way).

*5.7.* The following observations have been made while studying the answers to experiment 7:

a) a bilingual (female) speaker was judged as much worse in her English performance by all listeners;

b) both speakers were perceived as non–native by all but one subject who suspected "a trick" as she noticed some well–pronounced words (she was an Austrian–English bilingual);

c) a common belief was expressed by the listeners that a long (one year in the text) stay in England should be definitely helpful and decisive in learning English pronunciation;

d) according to the listeners, the speakers demonstrated a foreign accent by: intonation, stress placement, lack of fluency, final devoicing, and realizations of /r/, /θ/, /ð/ and some vowels; the suggested nationalities were: Polish (probably provoked by the content of the second text and the nationality of the experimenter) but also Italian, Slav, Spanish, French, Asian, Scandinavian, Hungarian, Indian, Arabic, Chinese or Japanese.

The above observations lead to a number of inferences. The listeners subconsciously distinguished a native speaker of English from a bilingual – perhaps the latter was more successful in sounding non–native due to her being a speaker of Polish as well and thus being able to realize Polish intentions consistently which, in turn, were easily perceived by the listeners–formal setting learners– as different from the realizations they had been taught to be correct English.

Only a bilingual listener perceived the correctly realized intentions. The learners, perceiving only realizations, could not notice a few correct ones among so numerous erroneous ones.

Learners were especially sensitive to segmental realizations, probably because they had been taught new segments and thus paid attention to segments in general (cf. experiment 6).

The speakers were judged to be foreigners in accordance with the tendency of the formal setting learners to attribute any deviation from a standard realization to "foreigness".

Formal setting learners will hopefully be and natural setting learners disillusioned by the lack of guarantee of success in foreign language acquisition in a natural setting (which is one of the findings of this work) <NOTE 10> .

*5.8. Observations.*

The most interesting outcome of the observations of live English speech concerns two processes: phonostylistic palatalization and intrusive r.

*5.8.1.* Phonostylistic palatalization has undergone lexicalization before *you , your* and *year* (this may prove they are clitics) – it is commonly used style–independently, also on TV and radio, even by BBC News announcers or by priests in church sermons. However, the process is still fully productive in the context of other lexical items beginning with Yod e.g. *It's early day[ʒ] yet; Sovie[tʃ ] Union ; Larges[tʃ ] union; like tha[tʃ ], yes.* <NOTE 11>

*5.8.2.* Intrusive r has acquired an interesting social status in England nowadays. It is seen as "posh" by educated people (e.g. solicitors, bank managers), but at the same time persecuted by prescriptivists as vulgar. The latter cannot, however, stop it creeping into quite formal styles licensed e.g. by the BBC where announcers use it more and more often e.g. *Neil Kinnock's dilemma [r] is...* or *President Botha [r] of South Africa* and even lawyers say *the law [r] is* or *law [r] and order.* The latter, incidentally, seems to be one of the first candidates for lexicalization, together with *the idea [r] of.*

Uneducated classes would rather avoid intrusive r to isolate themselves from everything "posh" on one hand, and to obey prescriptivists on the other.

**Notes**

*Note 1.* For [t,d] also called Yod coalescence (cf. Wells 1982) which is a too narrow term, as the palatalization discussed often does not involve a coalescence of a palatalized and palatalizing segments.

*Note 2.* For the purposes of a present discussion, major discrepancies between Polish and English phonostylistic processes concerned need to be mentioned.

While English demonstrates noncontinuant assimilation and, possibly, stop deletion in e.g. *Don't be late !*, Polish has only a process of a voiceless stop becoming a voiceless nasal in a homorganic cluster: nasal + stop + nasal word internally.

English is richer from Polish by a plosive assimilation (strident and nasal assimilation being also Polish).

English palatalization before [j] introduces a change by a segment (or in two features: [high] and [anterior] – cf. Rubach 1974 ), while a Polish process results in a single feature change (e.g. [t]→ [t$^{j}$] ).

Nasality in much more complex in Polish than in English, mainly due to the existence of nasal gliding and vowel nasalization processes which strongly interfere in the learner's English.

For a detailed description of both English and Polish phonostylistic processes of casual speech refer e.g. to: Rubach 1974, 1977 and 1980, and for Polish: Madelska 1987. Polish phonostylistic interference in English is treated also in Dziubalska 1983.

*Note 3.* Probably spelling plays a role here as well, cf. *don't , won't.*

*Note 4.* The reader was prof. John Wells of the Department of Phonetics, UCL.

*Note 5.* Several strings were meant to serve as distractors (i.e. the speakers had not been expected to produce a slip involving any of the processes concerned).

| | | |
|---|---|---|
| *as fat as butter* | [æz bæt æs fʌtə ] | [æz bæt æs fʌtə ] |
| *by all means* | – | [ balɒi....] |
| *ready money* | [ medɪ rʌnɪ ] | [ medɪ rʌnɪ ] |
| *a light sleeper* | [ ə sait sli:pə ] | [ ə slait li:pə ] |
| *a lame duck* | [ ə deim lʌk ] | [ ə deim lʌk ] |
| *hot water* | [ wɒt hɔ:tə ] | [ wɒt hɔ:tə ] |
| *hush money* | [ mʌʃ hʌnɪ ] | [ mʌʃ hʌni ] |
| *so rosy & fair* | [ fəuzi n̩ reə ] | [ fəuzi n̩ reə ] |
| *main road* | – | [ drein məud ] |
| *besetting* | [ sɪbetɪŋ ] | – |
| *additive* | – | [ ætɪdɪv ] |

*Note 6.* In control sentences (cf.Ch.5 : Note 6) all Poles correctly applied aspiration and lack of plosion; they applied phonostylistic palatalization in sentence 2, but not in 4 or 7; and, finally, they were hesitant in applying linking r. Moreover, when asked afterwards, they admitted to have consciously been learning all these processes, to have stopped monitoring their use of aspiration or lack of plosion, to have managed to learn palatalization only in fixed phrases like *Would you ...*, and to be not sure about their use of linking r.

*Note 7.* The uneducated speakers were two Irishmen who completed their education with four classes of a primary school.

*Note 8.* The speaker of IV and V was assigned a Scottish accent a few times by English listeners.

*Note 9.* The perceptions of two of the listeners were intricate. One of the Polish listeners who learned English in a natural setting judged readings I and IV (but particularly I) as unacceptable English – from a communicative point of view. For her they represented the least intelligible variety or style of English (although she has been living and working in London for more than 15 years).

According to one English listener, all readings came from different people not all of whom were native speakers of English. He recognized the style of I and IV as rapid and indistict, accusing speaker IV of talking too fast whereas "English is not really a language which one can speak quickly". He also heard at least two different people in III.

*Note 10.* In the next step of this experiment, the listeners should be native speakers of English and natural setting learners.

*Note 11.* Kaisse's 1987:37 examples of unacceptable contexts for palatalization are observationally inadequate.

Chapter 6

# Conclusions

6.0. This chapter constitutes an attempt at addressing the main issues raised in the present work which have a direct bearing on the formulation of an acquisition model of foreign language phonology.

*First*, a final version of the acquisition model is presented as an outcome of hypothesis testing conducted in the thesis.

*Second* ,the nature and acquisition of phonostylistic processes of casual speech are elaborated on.

*Third*, the question is considered of how the observed hierarchies of process applications in foreign speech relate to universal hierarchies (markedness scales).

*Fourth*, the learning of rules (or morphonological processes) is briefly discussed.

*Fifth,* the application of Dressler's 1985 model of morphonology to the Polish–English case is briefly discussed.

*Sixth* , possible areas of application of the model are suggested.

6.1. Irrespective of the setting of acquisition, the learner acquires a second language phonology by means of *learning*, i.e. a mechanism quite different to automatic and uncontrolled acquisition.<Note 1> Learning may ultimately result in a total unsuppression and correct limitation of those natural phonological processes of a pre–linguistic stage which were selected to operate in the language learned. Success, however, may be expected only if all the conditioning factors of acquisition are favourable.

In his search for a foreign language sound intention the learner observes and tries to imitate the foreign output. A formal setting learner is trained to observe and imitate through instruction, which is the area where a natural setting learner is impoverished: it is harder for him to observe the foreign output constructively.

Also, learners of the two settings are differentiated by social–psychological factors in the background of acquisition. Attitudes and, consequently, motivation and orientation in second language acquisition may differ quite substantially in the two groups of learners, which may, in turn, lead to an essential difference in their achievement. In the case of Polish learners of English studied here, social–psychological conditions prove to favour the formal setting learners. They apply more

foreign language processes and more consistently in their foreign language productions than the natural setting learners do. This discrepancy points again to the rejection of and uncontrolled acquisition as a procedure applied by learners: achieving the ability to apply *all* second language processes *consistently* should be a matter of time in automatic acquisition the time being shortest for those most extensively exposed to foreign language outputs, i.e. natural setting learners.

Neither is the *learning* procedure the same as that of the child: the latter cannot, in principle, be driven in the acquisition of his/her native tongue by attitudes towards that language <NOTE 2>. His/her acquisition cannot, then, be controlled in the way the adult's acquisition is.

The phonological perception of a speaker is in terms of phonemes and not surface phonetic segments (cf. Stampe 1984). It is separated from the surface by the fewest number of substitutions (cf. Stampe 1984). The learner's perception, therefore, is in terms of the phonemes selected to function in his native language i.e. either language–specifically marked or universally unmarked <NOTE 3> ones. The more effectively he trains himself to perceive the phonetic realizations of foreign sound intentions, the sooner he will "decipher" the latter. Only then may a consistently correct production follow (cf. the model below). <NOTE 4>

*Learning* in foreign language acquisition refers to processes as well as rules (phonological and morphonological rules). Although uniform in the learning stage, the resultant status of the outcomes is different: a rule remains what it is; a process, however, regains its status (after going through a stage of "rule–hood") as a reawakened natural process limited in an L2–specific way.

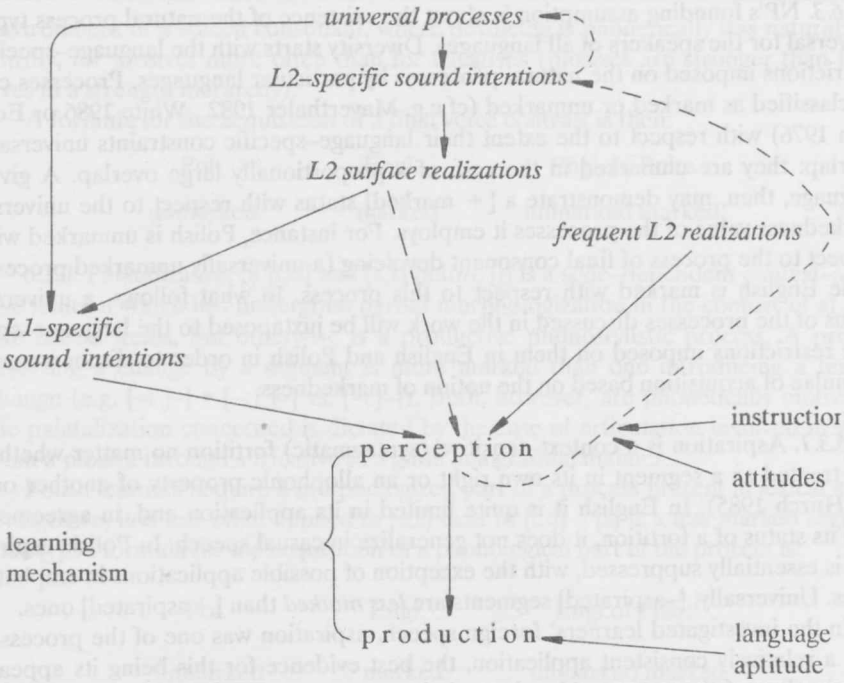
6.2. Phonostylistic processes of casual speech constitute a category of phonological processes and, as such, are acquired in an analogous fashion. Moreover, they are very often generalizations of style–independent processes (e.g. nasal assimilation) which may be,thus, learned through the mediation of those generalized casual speech versions. As their motivation extends far beyond pure phonetic criteria, their application in the learner's foreign speech could not be the result of automatic articulatory weakening dictated by the inertia of articulators and triggered by speed. Although a phonetic basis for casual speech processes is undeniable, it is still very often language–specific and, thus, the processes may be devoid of universal phonetic conditioning.

Electropalatography supplies persuasive evidence for a direct gradual dependence of assimilation in place of articulation (commonly generalized in casual speech) on speed (cf. e.g. works by Barry, Hardcastle, Nolan, Kerswill, Wright). However:

a) electropalatograms show only contact, but do not indicate approach of the articulators (which might already have a significant acoustic effect) ;

b) particular studies have been done with low numbers of speakers (for instance, two subjects in Kerswill and Wright 1987), and therefore might be invalidated due to the lack of statistical significance <NOTE 5>;

c) physiological effects may not necessarily correspond one–to–one to auditory effect;




*A model of acquisition of second language phonology*

d) the same process may apply when the speed of delivery is relatively low: a mechanic–phonetic motivation is then superseded by other linguistic or socio–psychological parameters of casualness (e.g. frequency of occurrence of a given lexical item or degree of attention paid to speech).

An interesting finding is one of the results of Wieden's 1979 investigation of speech tempo. He found out a direct correlation between the duration of a word (and syllable) and the number of its segments, *up to a limit of 5 segments* (Wieden 1979: 32–33). Thus, the more segments (from 1 to 5) the slower one speaks, which consequently means that no weakening processes can be conditioned in these sequences solely by a change in speed (irrespective of the overall text–level tempo). Casual speech processes usually affect word or syllable offsets, so these are really units relevant for the application of these processes. Moreover, measuring the duration of words or syllables seems most reliable as "any type of calculation of physical phrase–level tempo on a speech unit/time basis is problematic, as smaller units like words, syllables or segments in particular are only linguistically or functionally equivalent among themselves, but certainly not in duration" (Wieden 1979: 29).

Generally, both normative and performance restrictions on casual speech are more powerful in the foreign output of the learner : he has to reconcile the specific extra–linguistic norms of two languages – his native one and L2.

*6.3.* NP's founding assumption is about the existence of the natural process types universal for the speakers of all languages. Diversity starts with the language–specific restrictions imposed on the natural processes by particular languages. Processes can be classified as marked or unmarked (cf.e.g. Mayerthaler 1982 , White 1986 or Eckman 1976) with respect to the extent their language–specific constraints universally overlap: they are unmarked in the case of a proportionally large overlap. A given language, then, may demonstrate a [+ marked] status with respect to the universal markedness value of the processes it employs. For instance, Polish is unmarked with respect to the process of final consonant devoicing (a universally unmarked process) while English is marked with respect to this process. In what follows, a universal status of the processes discussed in the work will be juxtaposed to the language–specific restrictions imposed on them in English and Polish in order to discover some formulae of acquisition based on the notion of markedness.

*6.3.1.* Aspiration is a context–sensitive (syntagmatic) fortition no matter whether it is treated as a segment in its own right or an allophonic property of another one (cf. Hurch 1985). In English it is quite limited in its application and, in agreement with its status of a fortition, it does not generalize in casual speech. In Polish, aspiration is essentially suppressed, with the exception of possible applications in emphatic styles. Universally, [–aspirated] segments are *less marked* than [+aspirated] ones.

In the investigated learners' foreign speech, aspiration was one of the processes with a relatively consistent application, the best evidence for this being its appearance in slips of the tongue. Also, it tended to appear more often in accented positions in a sentence or phrase, which is predictable for a fortition.

In sum, a formula for the acquisition of aspiration seems to be:

| Pol. | Engl. | Engl. of Poles |
|---|---|---|
| unmarked | marked | marked |

(i.e. Polish is unmarked with respect to the process, English is marked with respect to it; English of Poles becomes marked with respect to it)

*6.3.2.* Final obstruent devoicing is a context–sensitive lenition. [–voiced] obstruents are universally *less marked* than [+voiced] ones. They occupy the highest position in the strength hierarchy and the lowest in the sonority hierarchy of sounds.

An implicational universal for maintaining a contrast in voice predicts that a contrast in a final position implies its existence in a medial position, and this in turn implies a contrast in an initial position. According to Eckman 1976, those areas of the target language which do not "imply" any areas of the native language are easier for the learner to acquire. A final voice contrast in English implies a medial and initial contrast in Polish. Consequently, Poles learning English employ what is implied i.e. Polish contrasts. The prediction holds for the investigated speakers with the exception of those who did apply a final contrast in a constrained fashion, i.e., firstly, under control or in an accented position in an utterance, which are contexts favoured by fortitions (thus, a lenition is not expected to apply); secondly, in the left–hand

environment of a voiced consonant, where devoicing is phonetically less natural; and thirdly, for plosives more often than for fricatives (plosives are stronger than fricatives in a strength hierarchy).

A formula for the acquisition of a final voice contrast is then:

| Pol. | Engl. | Engl. of Poles |
|---|---|---|
| unmarked | marked | unmarked marked |

*6.3.3.* Palatalization of [t,d] and [s,z] before [j] is a style–dependent context–sensitive lenition which has undergone partial morphologization in the context of at least two lexical items, but otherwise is a productive phonostylistic process. A process involving a change by a segment is more marked than one introducing a feature change (e.g. [–t j–]→ [–tʃ j–] vs. [–t$^{j}$j–]). Both, however, are phonetically motivated; the palatalization concerned is dictated by the ease of articulation involved in going from a plosive through a fricative to a glide in a gradual manner.

Polish learners acquire a morphologized part of a process present in lexical items. Even there, it is less often applied to [s,z] than to [t,d] – [s] is a less marked segment than [ʃ]. A formula for the acquisition of a phonological part of the process is:

| Pol. | Engl. | Engl.of Poles |
|---|---|---|
| unmarked | marked | unmarked marked |

*6.3.4.* Stop deletion, noncontinuant assimilation and nasal assimilation as a particular case of the latter are all lenitions generalized in casual speech. Stop deletion is in a feeding relationship with the other process(es). In a voiced context, stop deletion is motivated by a voicing sequencing constraint (cf. Hutcheson 1973: 86).

As far as assimilation is concerned, nasals are universally prone to change their articulatory position, and *apical–nonapical* clusters are universally marked which results in the instability of alveolar articulations.

In Polish the application of these processes is heavily restricted (cf. Ch.5: <NOTE 2> ) and interfered with by language–specific processes of nasal gliding and vowel nasalization which produce marked segments according to the marking relation [–nasal V] < [+nasal V].

An acquisition formula for the above lenitions might be stated as:

| Pol. | Engl. | Engl.of Poles |
|---|---|---|
| marked | unmarked | marked |

*6.3.5.* Processes responsible for the structure of the segments [θ], [ð] and [r] are prelexical context–free fortitions. The choice of segment structure is language–specific while its perception by the learner in foreign speech is influenced both by his native language segment structure constraints and by universal segment markedness. In the Polish learners' English the former influence was reflected in the production

of all sounds concerned, and the latter in the case of [r] : [–retroflex] sounds are universally less marked than [ + retroflex] ones.

The formula of acquisition, however, is differentiated this time (as was also noticed to a large extent in the case of aspiration) according to setting:

| Pol. | Engl. | Engl.of Poles |
|---|---|---|
| | | *formal setting* marked |
| unmarked | marked | |
| | | *natural setting* unmarked |

6.3.6. The velar nasal [ŋ] universally arises from a natural process of nasal assimilation – either prelexically or postlexically, depending on the language. English manifests additionally, together with e.g. German, a lenition deleting [g] in the right–hand context of a velar nasal. The formula for the acquisition of the latter by the Polish learners is the following:

| Pol. | Engl. | Engl.of Poles |
|---|---|---|
| unmarked | marked | unmarked marked |

*6.3.7.* The above considerations point to the following tendencies in the acquisition of phonological processes:

a) fortitions are easily acquired by formal setting learners, which is due to the contribution of controlled learning;

b) on the other hand, fortitions are hardly acquired by natural setting learners who lack controlled learning while striving for the ability to communicate; <NOTE 6>;

c) lenitions with respect to which L1 is unmarked but L2 – marked go through a stage of transfer from L1 to L2 before they obtain a required marked status which appears to be more readily accessible to formal setting learners;

d) L1 marked/ L2 unmarked lenitions retain their marked status in the learners' foreign output, especially when another marked process interferes.

*6.4.* Educated speakers, and especially linguistically educated ones, learn the rules of either their native or a foreign language so well that the rules may become productive. This does not concern an optional sandhi r rule which might be inconsistent even in native English, and is, thus, inconsistently acquired by the learners.

*6.5.* The conditioning factors of second language acquisition with reference to the acquisition of English by Poles may be summarized using the quoted model of (mor)phonology (Dressler 1985). Universals are helpful in acquisition when Polish has an unmarked status with respect to them e.g. final obstruent devoicing which unconstrained in English children speech and gets limited only later. Typologically, Polish is an inflecting language while English is a typological mixture rich in morphonological

rules. The data gathered in this work, however, do not imply any particular influence of type difference on acquisition. Language–specific systemic constraints on universals proved to interfere when they made L1 marked with respect to particular universals. This would also refer to a suprasegmental level where Polish and English differ in terms of rhythmic and melodic organization. The influence of L1 norms on the acquisition of L2 may be illustrated by a different sociolinguistic status of the [n]/[ŋ] pair: while the appearance of [n] in place of [ŋ] has a negative connotation in an {–ing} suffix in English, the situation is reverse in Polish at a morpheme boundary e.g. in *Irenka* : [iren + ka] v [ireŋ + ka]. Finally, performance goal conflicts are often resolved by different means in Polish and English, which necessarily influences acquisition. For example, there is vowel reduction in unaccented positions in English (ease of articulation) while Polish does not allow for this kind of weakening (unless in very relaxed speech ? cf. Madelska 1987).

*6.6.* Once established, a model of the acquisition of second language phonology can certainly be applied for the purposes of language teaching methodology. Bjarkman 1986 suggested the application of Natural Phonology in teaching pronunciation. What is lacking from his proposal is precisely a model of acquisition explicable in terms of a natural framework which would serve as a basis for the formulation of teaching strategies.

Not only does applied linguistics draw advantages from the existence of the acquisition model: the latter constitutes a direct feedback for the model of Natural Phonology itself, modifying its predictions with reference to the mechanism of phonological acquisition and giving new insights into the changing status of phonological rules. From this point of view, the model of the acquisition of second language phonology serves the purposes of theoretical linguistics.

**Notes**

*Note 1. Learning* and *acquisition* constitute two different mechanisms employable in the process of acquisition of a language. The term *acquisition* refers in a macro–scale to the process while in a micro–scale – to one procedure employed in the course of the process.

*Note 2.* Macnamara's 1973 statement that attitude does not matter at all in second language learning because babies do learn a language although they can hardly have an attitude, is drawing a parallel between the incomparable.

*Note 3.* Universally unmarked are those segments, features or processes which appear commonly in the majority of world languages, and, consequently, form the basis for implicational universals. The latter are specifically manifested and, thus, testable through such sources of substantive evidence as first language acquisition or speech pathology.

*Note 4.* cf. Tropf's model of the interlanguage phonology.

*Note 5.* Although, on the other hand, a noticeable tendency even for only one speaker is already a symptom of a potentially existent phenomenon.

*Note 6.* Both a) and b) refer to those fortitions whose status in L1/L2 is respectively *unmarked/ marked.*

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# Appendixes

**Appendix 1**

*You are asked to make an about 15 minutes recording (preferably mono) on the basis of the material below. Please, do not prapere yourself either in a written or oral form for this task. Once you decide to make the recording, do the whole of it at a time. Be as relaxed and natural as possible.*

*1. Say a few words about yourself:*

- what is your profession?
- how long have you lived in England?
- how old are you?
- when and in what circumstances did you start to learn English?
- did you receive any instruction in English (what kind and for how long)?
- what was your direct purpose of learning English?
- when do you use English and when Polish in your everyday life?
- which group of subjects did you prefer at school: the humanities or sciences and why?
- have you ever studied any phonetics?

*2. Read the following phrases, repeating each of them three times and trying to perform a given phrase differently in each case:*

1) Put pen to paper.
2) I've met Peter at the station.
3) Has your letter come?
4) Tell me what you want.
5) I can't go.
6) St. Paul's athedral.
7) bread and butter
8) a kind gift
9) Don't be late!
10) Mrs. Young
11) What's your weight?
12) Don't miss your train.
13) My china is broken.
14) Good morning.
15) You can have mine.
16) He kept quiet.
17) law and order
18) He won't buy it.
19) You musn't over-eat.
20) cup and saucer
21) cap and gown
22) I've given up.

*3. Read the enclosed text aloud and retell it afterwards in your own words (do not refer back to the text).*

When I wrote my book So Much Love, I dedicated it to my mum. I think the dedication says it all. It reads: "For Anne Reid - Born Anne Burton MacDonald, my mother who gave me security, strength, commonsense and honesty. Without her, this lovely life of mine which I enjoy so much would not have been possible."

My mum and dad, Leonard, were both Scottish – she came from Edinburgh and he was from Aberdeen. They married in Scotland more than 60 years ago but moved to Manchester where I grew up. My parents kept a cottage at a fishing village called Durure, eight miles out off Ayr, where we went every summer and during the school holidays. My brother, Roy, was four years older than me and we adored one another. He became a brilliant scientist but, sadly, he died two years ago from a heart attack.

The great thing about my mum was that she was always there. I only had to shout "mummy" and she'd respond. My mother was one of 10 children and they were a very close family so there were always lots of aunts and uncles around.

There's another wonderful thing i remember. As a child, I had an old packing-case in the garden which I pretended was my "house" and whenever I stewed gooseberries and good custard, my favourite dessert, I always took some to the house to leave for the fairies. Then muumy used to clear the plate before I went out to my house in the morning, to keep my fantasy going. She understood my need for a dream world. I believed in Father Christmas until I was about 12 years old and she let me go on believing.

One thing she never did, though, was to show affection either to my brother or myself. That's a Scottish thing. She never put her arms around me or kissed me, but it didn't depress me as it might have done another child. I kissed her every time I came in and every time I went out. She used to say: "I don't know who you belong to. You're nothing to do with me, Beryl."

She was always full of criticism, too. But when she did pay me a complement, to me it was the most marvellous thing in the world. It was her criticism that helped make me the survivor I am.

Right from the time I was four years old and told her I was going on the stage, there was absolutely no doubt in her mind that I was going to be an actress, just as she also knew that my brother Roy was going to be a brilliant scientist. She really was a remarkable person because, although we were brought up in the strict Scottish Presbyterian tradition – I wasn't even allowed to sew on Sundays – she went along with my career and encouraged me tremendeously all the way. My father didn't, but she did.

I left home when I was 16 and worked in a shop, but only for six weks. I went to an audition for a summer season at Bridlington one lunch hour, got the job and my stage career began. After I moved away, my mother used to come and visit me and I would visit her. But we didn't see one another very often, so it was always a treat when we did.

She had a great sense of humour and great sense of fun, my mum. I remember the time she came to the Pantomime Ball at Coventry. She was a little reluctant to come and she said she wouldn't be staying very late. But then she got dancing, which she absolutely adored, and suddenly it was 4am. I'd ordered lobster and champagne to

be served in her room at the hotel when she got back. I though she'd turn round and say she couldn't possibly eat lobster and drink half a bottle of champagne at that time in the morning.

But when I got back, there she was, sitting up in bed, thoroughly enjoying her treat. She looked at me very seriously and said: "I think I could get used to this life, Beryl."

My mum died when she was only 72. I didn't think at that time that it was fair because she was like someone of 35. Her brain was absolutely fantastic. Now I realise how lucky I was because she died of cancer in just six weeks and she would never have wanted to be an old crock. When they told me she was dying I was rehearsing a summer season in the south, but I flew up to Ayrshire to be with her.

They operated on her for cancer of the stomach but she was riddled with it and there was nothing that could be done. I was told that I could go and speak to her and then they would sedate her until the end . . . probably just a day away. To have a final conversation like that with your mpther is very hard indeed. I kept saying ridiculous things like "The garden's lovely now, Mummy", and "The cats are lovely", and she kept saying "I know they are, dear". I was the very last person she spoke to.

All my life, she had told me that if and when anything happened to her, I wasn't to stop working to mourn her. She told me that I had seen her often enough when she was alive and that I needn't bother with an old corpse. So, I did as I'd been told and kept on working when she died. My mother was not someone to be disobeyed, even in death.

I often think of my mum. The character I play in Gigi, which has now opened in London, is just like my mum, except she's rather more gushing as she's French. As I said at the beginning, I have a lot to thank her for. After all, without my dear mum there would have never ever been a me.

**Appendix 1A.**

*Questions addressed to formal setting learners under task 1:*

– what is your profession ?

– have you ever been in England or the USA ?

– how old are you ?

– when and in what circumstances did you start to learn English ? – did you or do you receive any instruction in English (what kind and for how long) ?

– what is your direct purpose of learning English ?

– when do you use English and when Polish in your everyday life ? – which group of subjects do you prefer: the humanities or sciences and why ?

– have you ever studied any phonetics ?

**Appendix 1B.**

*Questions addressed to English philologists under task 1:*

– how long did you stay in England or the USA ?

– when and in what circumstances did you start to learn English ?

– what was your direct purpose of learning English ?

– which group of subjects did you prefer at school: the humanities or sciences and why ?

**Appendix 2**

*A.* Good morning. I'd like to inquire about the Triumph you've advertized in today's *Standard*.

*B.* Yes, we have the car here...

*A.* Is the information given about the car valid ?

*B.* Yes, certainly. It is equipped with auto–transmission and power–assisted steering, which, I suppose, is the most important piece of information for you, and...

*A.* Well, obviously, but...is it really ice blue with darker blue inside ?

*B.* Oh...yes, I can assure you that this is the exact colour of the car.

*A.* All right, then. Can I arrange a test drive for, let's say, tomorrow ?

*B.* Y..es, you can have it tomorrow..at...6 p.m. . It'll cost you £10 in case you don't buy the car.

*A.* Ten pounds !! Couldn't you make it five ?

*B.* Sorry, madam, we have a fixed price for all customers.

*A.* Well...all right. I'll be there tomorrow. Goodbye.

*B.* Goodbye.

**Appendix 3**

| 1. | 2. |
|---|---|
| [ɪk'sentrik] | [dɪ'mɪnɪtɪ] |
| [fə'rain] | [staɪlɪ'stɪsɪtɪ] |
| [ə'leptaik] | [sɪ'vɪnɪtɪ] |
| [stə'lain] | [jurə'tɪsɪtɪ] |
| [fəu'ni:mɪk] | [sə'rɪdɪtɪ] |
| [ə'braid] | [sɪn'dɪsɪtɪ] |
| [sa:'dɒnɪk] | [rə'nɪsɪtɪ] |
| [kɔn'tempaik] | [ɔndə'mɪsɪtɪ] |
| ['frædʒail] | [lə'krɪdɪtɪ] |
| [dɪ'næstɪk] | [pɒlɪ'tɪsɪtɪ] |

**Appendix 4.**

Task I. *You are going to listen to five consequitive readings of the same set of 21 phrases. Every phrase is read three times in each case. Listen to the whole recording once, and answer the questions below:*

1) Is the set of phrases read by the same person in all five cases (refer to particular readings by means of numbers from 1 to 5) ?

2) Is the set read by a native–speaker of English in all cases ?

Task II. *Please turn to Task II after you have accomplished Task I. In order to answer the questions below you are asked to listen to each of the readings attentively at least once more. You can stop the tape at any time to listen to a particular phrase again; however, do not listen to any of the triplets more than three times.*

1) What general difference, if any, can you notice between particular readings ? Are they all acceptable English ?

2) Specify the deviations or differences you notice between the readings. Give examples of phrases, words, clusters of sounds or single sounds which appear to you either to differ throughout the readings or to be unacceptable.

Any additional comments concerning the readings are welcome.

**Appendix 5.**

*Text 1.*

I've been learning English for ten years. I started in secondary school, and I took private lessons. I have visited England twice, once for a year. It is easier for me to read English than to speak it. Writing is easier than speaking, too. I wish I had more time to spend keeping up my English.

*Text 2.*

English is a language in which grammar is simple and easy to learn, while the pronunciation is difficult, irregular and inconsistent. The Polish language has a complicated, yet largely regular grammar, but the pronunciation is consistent and therefore comparatively easy.

Polish is a highly inflected language. This means that most words undergo a change in form in order to indicate their changing function, or their changing relationship to other words in the sentence. The change of form consists principally in a variation of the ending. By its ending, a verb will declare, precisely, its person, number, tense and mood; a noun will indicate its number and case, defining exactly its relationship to other words in the phrase or sentence; and an adjective will show its complete agreement with the noun it qualifies.

To learn Polish properly, the student must be able to distiguish these varying forms and to apply them correctly, that is, to learn to associate with each its particular sense and function.

*Questions addressed to the listeners.*

1. *to Text 1 read by speaker 1*:
Is the speaker saying the truth about himself ? Justify your answer.

2. *to Text 1 read by speaker 2*:
Is the speaker saying the truth about herself ? Justify your answer.

3. *to Text 2 read by both speakers*:
Comment on both speakers (i.e. their nationality, native language, performance of English, and the like).

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